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Volume I

EXPLANATORY NOTES

for

DEPARTMENT OF AGRICULTURE

Fiscal Year

1956

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U.S. DEPARTMENT OF AGRICULTURE

CONTENTS

	PAGES
Table of Contents	I
Agricultural Research Service	1
Extension Service	160
Farmer Cooperative Service	196
Soil Conservation Service	202
Watershed Protection	226
Flood Prevention	250
Water Conservation and Utilization Projects	264
Agricultural Conservation Program Service	277

194515

PREFACE

The obligations shown in the Project Statements are on the basis of the appropriations and activities proposed in the 1956 Budget Estimates, and in some instances the activities reflected in the Project Statement are further divided into subcategories, reflecting a more detailed description of the work conducted under the appropriation items.

It should be noted that the obligations reflected as subcategories in the Project Statements as well as those in the Supplementary Project Statements are generally not obtained directly from accounting records that are formalized by specific account classifications. Therefore, such amounts represent in most instances the best approximation of the amounts indicated. Wherever it has been necessary, because of the nature of the activity, to distribute certain costs which are not directly available from the accounts, every effort has been made to allocate such charges as accurately as possible based on past experience, periodic time reports, or other factors.

C O N T E N T S

(Volume I)

194715

	Pages
AGRICULTURAL RESEARCH SERVICE:	
Purpose Statement	1
Salaries and Expenses	6
Payments to States, Hawaii, Alaska, and Puerto Rico	119
Foot-and-Mouth and Other Contagious Diseases of Animals and Poultry	136
Research Facilities	151
Working Capital Fund, Agricultural Research Center	152
Statement of Obligations Under Allotments and Other Funds	153
Passenger Motor Vehicles and Aircraft	157
EXTENSION SERVICE:	
Purpose Statement	160
Payments to States, Hawaii, Alaska, and Puerto Rico	163
Salaries and Expenses, Federal Extension Service	186
Statement of Obligations Under Allotments and Other Funds	194
FARMER COOPERATIVE SERVICE:	
Purpose Statement	196
Salaries and Expenses	197
Statement of Obligations Under Allotments and Other Funds	201
SOIL CONSERVATION SERVICE:	
Purpose Statement	202
Conservation Operations	206
Watershed Protection	226
Flood Prevention	250
Water Conservation and Utilization Projects	264
Statement of Obligations Under Allotments and Other Funds	271
Passenger Motor Vehicles	274
AGRICULTURAL CONSERVATION PROGRAM SERVICE:	
Purpose Statement	277
Agricultural Conservation Program	279

AGRICULTURAL RESEARCH SERVICE

Purpose Statement

The Agricultural Research Service was established by the Secretary of Agriculture on November 2, 1953 under the authority of Sec. 161, Revised Statutes (5 U.S.C. 22), Reorganization Plan No. 2 of 1953 and other authorities. It conducts all of the production and utilization research of the Department (except forestry research), and the inspection, disease and pest control and eradication work closely associated with this research. The Administrator of this Service is also responsible for the coordination of all research of the Department.

The program of the Agricultural Research Service is organized under three areas of activity as follows:

1. Research is conducted under five major categories: (a) Crop research; (b) Farm and land management research; (c) Livestock research; (d) Human nutrition and home economics research; and (e) Utilization research.

2. Regulatory activities are conducted under three major categories: (a) Plant disease and pest control; (b) Animal disease and pest control; and (c) Meat inspection.

3. The Service administers the Federal-grant funds for research at the State Agricultural Experiment Stations and operates experiment stations in Puerto Rico, Virgin Islands, and Alaska.

The Agricultural Research Service also carries out emergency programs, when necessary, for the control and eradication of animal diseases, such as foot-and-mouth disease and vesicular exanthema of swine, and for the control of emergency outbreaks of insects and diseases. In addition, research on the feasibility of developing domestic sources of supplies for agricultural materials designated as strategic and critical by the Office of Defense Mobilization is conducted upon their recommendation or approval. In the current fiscal year limited research on foot-and-mouth disease has been undertaken at Plum Island, New York in facilities made available to this Department by the Department of the Army.

The Agricultural Research Service maintains a central office in Washington, D. C., and operates the 12,000 acre Agricultural Research Center at Beltsville, Maryland. However, most of the work is conducted at approximately 520 locations in the United States, Territories and Possessions and at several locations in foreign countries. Much of the work is conducted in cooperation with the State Agricultural Experiment Stations and with other agencies, both public and private. On November 30, 1954, there were approximately 12,675 full-time employees, of which 2,951 were in the Washington Metropolitan area and 9,724 were located at other points in the United States, Territories and Possessions, and foreign countries.

	Appropriated, 1955	Budget Estimates, 1956
Appropriated funds:		
Salaries and expenses:		
Research	$35,822,000	$37,684,000
Plant and animal disease and pest control	17,689,579	17,254,000
Meat inspection	14,325,000	14,325,000
Total	67,836,579	69,263,000
Payments to States, Hawaii, Alaska, and Puerto Rico	19,453,708	24,753,708
Foot-and-mouth and other contagious diseases of animals and poultry - Research	1,900,000	1,900,000
Total appropriated funds	89,190,287	a/ 95,916,708

a/ In addition, the 1956 budget proposes an appropriation in the amount of $5,788,897 to reimburse the Commodity Credit Corporation for funds advanced and expenses incurred in fiscal year 1954 for eradication of foot-and-mouth and other contagious diseases of animals and poultry.

Summary of Appropriations, 1955 and Estimates, 1956

Appropriation Item	Appropriated, 1955	Budget Estimates, 1956	Increase or Decrease
Salaries and expenses, Agricultural Research Service:			
Research	$35,822,000	$37,684,000	+$1,862,000
Plant and animal disease and pest control	17,689,579	17,254,000	-435,579
Meat inspection	14,325,000	14,325,000	- -
Total, Salaries and expenses, Agricultural Research Service.	67,836,579	69,263,000	+1,426,421
Payments to States, Hawaii, Alaska, and Puerto Rico, Agricultural Research Service	19,453,708	24,753,708	+5,300,000
Foot-and-Mouth and Other Contagious Diseases of Animals and Poultry:			
Eradication activities	a/ - -	b/ - -	- -
Research	1,900,000	1,900,000	- -
Total, Foot-and-Mouth and Other Contagious Diseases of Animals and Poultry	a/1,900,000	b/1,900,000	- -
Total	c/89,190,287	c/95,916,708	+6,726,421
Special Activities			
Research on Strategic and Critical Agricultural Materials	331,500	300,000	-31,500
Repayment to Commodity Credit Corporation for Eradication of Foot-and-Mouth and Other Contagious Diseases of Animals and Poultry	d/ - -	e/5,788,897	- -

a/ $2,410,233 transferred from other appropriations, and prior year balances were available for eradication activities under "Foot-and-Mouth and Other Contagious Diseases of Animals and Poultry".

b/ 1956 Budget proposes continuation of authority to transfer funds from other accounts of the Department to this appropriation to finance emergency disease eradication activities.

c/ In addition under the appropriation for facilities for research on foot-and-mouth disease, it is estimated that $2,017,046 will be obligated in 1955 and $38,525 in 1956 from unobligated balances brought forward from prior years.

d/ The Act of February 12, 1954 (Public Law 295) authorized the Secretary of Treasury to cancel notes in amount of $2,064,060 to cover unreimbursed expenses and transfers from Commodity Credit Corporation through June 30, 1953.

e/ 1956 Budget Estimates propose appropriation of $5,788,897 for reimbursement to Commodity Credit Corporation for transfers to the appropriation "Eradication of foot-and-mouth and other contagious diseases of animals and poultry," fiscal year 1954, including interest thereon through June 30, 1955.

Transfers in Estimates, 1956

The Budget Estimates propose the transfer of activities being financed in fiscal year 1955 from other agencies as follows:

Atomic Energy Commission

The 1956 Estimates propose the transfer of $95,000 from the appropriation "Operating Expenses, Atomic Energy Commission" to "Salaries and Expenses, Agricultural Research Service," research.

This transfer covers work directed toward improvement of soil management and crop production through investigations with isotopes.

This cooperative project began in 1948 as one of the important peacetime projects made possible by atomic energy. The work has been valuable in providing new information on many fundamental aspects of soils and plant nutrition.

Since the current research program is intimately associated with the regular and continuing responsibilities of the Soil and Water Conservation Research Branch of the Agricultural Research Service, the Atomic Energy Commission and the Department of Agriculture have mutually agreed to the transfer of the work and the funds for conducting this research.

Department of the Army

The 1956 Estimates propose the transfer of $377,500 from the appropriation "Research and Development, Army" to "Salaries and Expenses, Agricultural Research Service," research.

The Department of the Army is currently supporting, by advance of funds to the Department of Agriculture, research to develop control measures for insects which transmit diseases and annoy man, and also destroy food, clothing, and other items in storage and military installations. This research program was initiated during World War II with funds transferred by the Office of Scientific Research and Development. Since then the research program has been supported by the Department of the Army.

While research aimed at protection of man from insects has been intensified during a period of war, the results of most of the research are of equal or greater direct benefit to the health, comfort, and economy of civilians. The operation of the research for either purpose is a basic responsibility of the Department of Agriculture. Therefore, the Departments of the Army and Agriculture have mutually agreed to this transfer.

This work includes basic entomological and chemical research to develop methods of control of insects and other arthropods that annoy or transmit diseases to man and animals. Research is conducted on the biology of insects, new insecticides and repellents, and methods of dispersing insecticides for control of such pests. Research is also included on the recognition and control of insects of importance in other countries where out civilian and military personnel are located.

(a) Salaries and Expenses

	Research	Plant and Animal Disease and Pest Control	Meat Inspection	Total
Appropriation Act, 1955 ..	$35,353,000	$17,689,579	$14,325,000	$67,367,579
Activities transferred in the 1956 estimates from:				
"Operating Expenses, Atomic Energy Commission" a/	+95,000	-	-	+95,000
"Research and Development, Army" b/	+377,500	-	-	+377,500
Activities transferred in the 1956 estimates to "Salaries and expenses, Office of Information, Agriculture" c/	-3,500	-	-	-3,500
Base for 1956	35,822,000	17,689,579	14,325,000	67,836,579
Budget Estimate, 1956	37,684,000	17,254,000	14,325,000	69,263,000
Increase or decrease	+1,862,000	-435,579	-	+1,426,421

SUMMARY OF INCREASES AND DECREASES, 1956

Research:

To strengthen forage production research to reduce cost of producing livestock and to aid in adjusting production to consumer demand ($354,000); to intensify research on cotton breeding ($75,000); and to develop improved disease resistant oats ($50,000)	+479,000
To strengthen research on controlling virus diseases of horticultural crops, especially deciduous fruits	+50,000
To intensify research on emergency crop insect problems, especially on Mexican fruit fly ($125,000); on pink bollworm and other cotton insects ($75,000); and on problems of insects becoming resistant to new insecticides ($50,000)	+250,000
To strengthen research in watershed hydrology	+100,000
To develop improved equipment and low-cost structures for making, storing, and feeding silage	+50,000
To strengthen research to aid farmers on farm business and adjustment problems	+100,000
To strengthen livestock breeding research to increase efficiency of production and to adjust product quality to market demand ..	+247,000

a/ For improvement of soil management and crop production through investigations with isotopes.

b/ For research on measures for controlling insects and other arthropods.

c/ For news-type photographic services.

To strengthen dairy cattle breeding and feeding research to improve efficiency and lower cost of milk production		+150,000
To intensify research on animal diseases and parasites to reduce livestock and feed losses		+261,000
To initiate an animal husbandry research program in the Virgin Islands		+25,000
To expand research on cotton utilization		+150,000
Increase for Research		+1,862,000
Plant and animal disease and pest control:		
Increase to carry out additional responsibilities under Public Law 518, approved July 22, 1954, amending the Insecticide, Fungicide and Rodenticide Act		+75,000
Decrease in Federal participation in plant disease and pest control programs as follows:		
Sweetpotato weevil control	-50,000	
Phoney peach and peach mosaic eradication	-38,000	
Golden nematode control	-100,000	
White-fringed beetle control	-50,000	
Grasshopper and Mormon cricket control	-226,400	-464,400
Decrease in diagnosis, control and eradication of miscellaneous animal diseases		-33,079
Decrease due to transfer of responsibility for administration of the Process Butter Act to the meat inspection sub-appropriation		-13,100
Net decrease in Plant and Animal Disease and Pest Control		-435,579
Net Increase, Salaries and Expenses		+1,426,421

PROJECT STATEMENT

Project	1954	1955 (estimated)	Increases or Decreases	1956 (estimated)
1. Research				
a. Crop research:				
(1) Field crops	$4,586,916	$5,035,900	$479,000(1)	$5,514,900
(2) Horticultural crops	3,203,321	3,496,300	+50,000(2)	3,546,300
(3) Entomology	3,785,884	3,913,800	+250,000(3)	4,163,800
Total, crop research	11,576,121	12,446,000	+779,000	13,225,000
b. Farm and land management research:				
(1) Soil and water conservation	3,397,097	3,645,200	+100,000(4)	3,745,200
(2) Agricultural engineering	1,316,859	1,509,700	+50,000(5)	1,559,700
(3) Production economics	1,247,712	1,369,100	+100,000(6)	1,469,100
Total, farm and land management research.	5,961,668	6,524,000	+250,000	6,774,000
c. Livestock research:				
(1) Animal and poultry husbandry	2,228,517	2,306,900	+247,000(7)	2,553,900
(2) Dairy husbandry	1,270,635	1,281,500	+150,000(8)	1,431,500
(3) Animal disease and parasite	1,905,265	2,103,600	+261,000(9)	2,364,600
Total, livestock research	5,404,417	5,692,000	+658,000	6,350,000
d. Administration of payments to States, and Territorial research:				
(1) State experiment stations	190,257	177,000	- -	177,000
(2) Territorial experiment stations	539,656	555,000	+25,000(10)	580,000
Total, administration of payments to States, and Territorial research	729,913	732,000	+25,000	757,000
e. Human nutrition and home economics research:				
(1) Human nutrition	1,010,647	1,084,000	- -	1,084,000
(2) Home economics	341,880	342,000	- -	342,000
Total, human nutrition and home economics research	1,352,527	1,426,000	- -	1,426,000
f. Utilization research:				
(1) Cereal and forage crops	1,148,702	1,406,900	- -	1,406,900
(2) Cotton and other fibers	1,271,089	1,518,400	+150,000(11)	1,668,400
(3) Fruits and vegetables	1,884,415	1,935,800	- -	1,935,800

(Continued on next page)

Project	1954	1955 (estimated)	Increases or Decreases	1956 (estimated)
(4) Oilseeds	990,780	1,144,100	- -	1,144,100
(5) Sugar and special plants	890,365	864,900	- -	864,900
(6) Poultry, dairy, and animal products	1,532,223	1,891,400	- -	1,891,400
(7) Agricultural residues	238,209	240,500	- -	240,500
Total, utilization research	7,955,783	9,002,000	+150,000	9,152,000
Subtotal	32,980,429	35,822,000	+1,862,000	37,684,000
2. Plant and animal disease and pest control				
a. Plant disease and pest control:				
(1) Plant pest control	6,289,423	6,280,700	-389,400(12)	5,891,300
(2) Plant quarantine	2,671,532	2,691,300	- -	2,691,300
Total, plant disease and pest control	8,960,955	8,972,000	-389,400	8,582,600
b. Animal disease and pest control:				
(1) Animal disease control and eradication	7,175,526	7,461,679	-46,179(13)	7,415,500
(2) Animal quarantine	1,234,403	1,255,900	- -	1,255,900
Total, animal disease and pest control	8,409,929	8,717,579	-46,179	8,671,400
Subtotal	17,370,884	17,689,579	-435,579	17,254,000
3. Meat inspection	14,160,173	14,325,000	- -	14,325,000
Total available or estimate	64,511,486	67,836,579	+1,426,421	69,263,000
Transfer in 1955 estimates from:				
"Agricultural Marketing Act, Agriculture"	-303,748	- -		
"Salaries and expenses, Office of Administrator, Agricultural Research Administration"	-350,819	- -		
"Salaries and expenses, Office of Experiment Stations, Agricultural Research Administration"	-355,410	- -		
"Virgin Islands agricultural program, Office of Experiment Stations, Agricultural Research Administration"	-95,855	- -		

(Continued on next page)

Project	1954	1955 (estimated)
"Research on agricultural problems of Alaska, Office of Experiment Stations, Agricultural Research Administration"	-269,966	- -
"Salaries and expenses, Bureau of Human Nutrition and Home Economics, Agricultural Research Administration" ...	-1,391,529	- -
"Salaries and expenses, Bureau of Animal Industry, Agricultural Research Administration"	-26,528,339	- -
"Salaries and expenses, Bureau of Dairy Industry, Agricultural Research Administration"	-1,636,897	- -
"Salaries and expenses, Bureau of Agricultural and Industrial Chemistry, Agricultural Research Administration" ...	-7,491,825	- -
"Salaries and expenses, Bureau of Plant Industry, Soils and Agricultural Engineering, Agricultural Research Administration".....	-11,263,757	- -
"Salaries and expenses, Bureau of Entomology and Plant Quarantine, Agricultural Research Administration"....	-11,685,863	- -
"Salaries and expenses, Bureau of Agricultural Economics" .	-1,191,339	- -
"Salaries and expenses, Forest Service"	-178,459	- -
"Forest roads and trails, Forest Service"	-2,000	- -
"Conservation operations, Soil Conservation Service"	-618,393	- -
"Salaries and expenses, Marketing services, Production and Marketing Administration"...	-623,682	- -
"Resources management, Bureau of Indian Affairs"	-62,070	- -
Transfer in 1956 estimates from:		
"Research and development, Army"	-369,965	-377,500
"Operating expenses, Atomic Energy Commission"	-95,000	-95,000
Transfer in 1956 estimates to		
"Salaries and expenses, Office of Information, Agriculture" .	+3,430	+3,500
Total appropriation or estimate	- -	67,367,579

INCREASES AND DECREASES

The net increase of $1,862,000 under the subappropriation item "Research" for 1956 consists of the following:

(1) An increase of $479,000 under the activity "Field crops research" composed of:

(a) Increase of $354,000 to expand research on forage crop production to reduce the cost of producing livestock and to aid in adjusting production to consumer demand.

Problem and Need for Increase: A major farm problem today is the need to adjust agricultural production to consumer demand. There are serious crop surpluses and millions of acres must be diverted from crops which are in surplus to other agricultural production. Greater production of livestock and livestock products at lower cost to the consumer would greatly improve the situation by (1) increasing the need for greater acreages of pasture and forage crops, which are soil-conserving and soil-building, in order to produce required low-cost feed; thereby decreasing the acreage of crops which are now in surplus, mostly soil-depleting crops, and (2) improving the national diet and assuring more adequate meat supplies for the Nations rapidly increasing population.

Grasses and legumes supply more than two-thirds of the feed for livestock. Considerably more grass-legume forage could be used by livestock with a savings in feed costs and greater profit to stockmen. The current Agricultural Conservation Program is encouraging the establishment of forage crops.

There is need for diverting at least 25 to 30 million acres of cropland for surplus crops. Much of this land is suited for forage production. Larger acreages of improved hay, pasture and range can help in the acreage adjustment to soil-conserving and soil-building crops.

Several factors are limiting greater forage production. These include (1) lack of suitable, disease-resistant varieties for many important producing areas, (2) high cost of establishing and maintaining stands, and (3) competition from brush and weeds.

Disease losses in hay and pasture crops amount to over one billion dollars a year. Costs of establishing pastures in the Southeast approximate $35 to $50 an acre, and even then frequent failures cost farmers many millions of dollars annually. Few existing varieties of our major grasses and legumes possess the desirable combination of disease resistance, high yield, drought resistance and winter hardiness. Suitable varieties or species are needed for many dryland and alkali sites in the West and for rotation pastures in the Southeast. Problems in the production, processing and handling of chaffy-seeded range grasses must be solved to provide ample seed supplies for vast areas in the Great Plains and arid regions of the West. Disease-resistant legumes that are more persistent in pasture mixtures are needed throughout the humid and irrigated regions. Basic research is needed to develop more economical methods of evaluating crops used for grazing. Grass and legume seed growing methods must be developed to insure stable seed supplies and to protect the superior performance value of improved varieties.

It has been conservatively estimated that the annual loss caused by weeds on pasture and rangelands is more than 9 percent of the products produced, or some $471 million annually. On pasture and rangelands, weeds compete with forage plants for water, light, and plant nutrients. This competition decreases the quality and quantity of forage plants and livestock products. Studies have shown that brush may reduce the grazing capacity of infested land by as much as 35 percent, oftern resulting in more than a 25 percent reduction in beef production. Wild garlic in pastures, which results in off-flavored milk, costs North Caroline farmers more than one million dollars annually. Weeds also reduce the quality of hay and lower the value of dehydrated forage crop products and ensilage. Many weeds in pastures are poisonous to livestock. These poisonous weeds are responsible for livestock losses amounting to more than $15 million annually.

While chemicals are being developed which will effectively clear land of brush and weeds, some herbicides remain in soils for several years following application and may adversely affect the reestablishment of forage plants. This problem is much more acute in the arid regions than in the humid regions.

Plan of Work: Forage research. In the humid region, the research would be concentrated on basic disease, physiology, and plant breeding studies needed for the development of superior varieties of grasses and legumes for the various soils and climatic conditions, also on the development of the most economical and productive pasture establishment and maintenance practices with desirable legume-grass combinations. The work would be conducted in selected states of the North Central, Southeastern, and Northeastern regions.

In the Great Plains and arid regions, grass breeding and grass seed production and harvesting research would be strengthened. Reseeding and grazing management research on both native and reseeded grasses would be expanded. Procedures would be developed to insure the maintenance of performance of varieties of improved grass and legume seed grown in the West for use on Mid-western and eastern farms.

The work would be conducted in cooperation with state experiment stations which would conduct the local variety trials and participate in the grazing tests.

Research to control weeds and brush. The increase would provide for additional research cooperative with state experiment stations on the development of more effective herbicides. It would permit (1) a more systematic screening and evaluation of new chemicals in an effort to develop selective herbicides for the control of specific woody plants, (2) more intensive studies on the physiological response of plants to herbicides, (3) life cycle studies to establish the most susceptible stage of growth and growth factors affecting susceptibility, and (4) the effect of herbicides on desirable forage species.

Since many of the weeds in pasture and rangelands are difficult to control with known herbicides or economically feasible cultural methods, research would be conducted on methods of biological control such as

those developed for Klamath weed and other noxious plants. Foreign explorations would be made for insects or plant diseases that would attack halogeton, Scotch broom, Russian thistle, and similar serious weed pests. The biological controls which are found would be carefully screened and tested under quarantine conditions before release in the United States.

(b) Increase of $75,000 to intensify research on cotton breeding to develop disease-and insect-resistant cottons to meet diverse end-use requirements.

Problem and Need for Increase: Encouraging results obtained in recent efforts to transfer fiber quality characters from primitive cotton species have focused attention on the need for increased basic research on cotton genetics. Desirable vegetative or fruiting characteristics, and nematode and disease resistance have been found in some of these species and wild cotton relatives. The literature on resistance in cotton to insect attack is extensive, but mostly deals with observations and impressions rather than with critical data. Improved techniques are being developed and opportunities now exist, with both long-staple and Upland types of cotton, for making far-reaching improvements in disease and insect resistance, to meet diverse end-use requirements and for securing better adaptation to mechanization and other modern production practices. The recently released variety, Pima S-1, that is markedly superior to earlier releases in a number of desirable characteristics, is an example of what can be done by basic research. Research on breeding methodlogy at Knoxville and elsewhere indicates that it may be possible to develop the use of hybrid vigor in cotton production. The task of incorporating an increasing number of desirable characters into commercial varieties is making the breeding program progressively more difficult and time-consuming. In addition, an acute need exists for encouraging regional variety tests under Federal supervision.

Plan of Work: The work would be initiated in those States where a large collection of basic material is being maintained and where a cooperative program of fundamental plant breeding research is in progress. The proposed breeding program for insect resistance would be conducted in cooperation with the entomologists to determine the possibility of developing varieties that may be resistant or tolerant to pink bollworm, boll weevil, thrips, and other cotton insects. The mode of inheritance of resistance to certain of the major cotton diseases has been worked out individually, but further basic studies are required to understand the breeding techniques required for combinations involving resistance to different diseases and other characters. The data from certain crosses indicate that it is extremely difficult to combine desirable agronomic characters with disease resistance or with high strength. Research would be conducted to develop the possible use of hybrid vigor in cotton production. Some of the work would be done by contract research.

(c) Increase of $50,000 to develop improved disease-resistant oats.

Problem and Need for Increase: Oats rank third in farm value among cereals and fifth among all crops. They are sown annually on some 45 million acres in the United States. Contrary to general opinion, the acreage is increasing due primarily to information recently developed that oats contribute vital elements to rations for dairy animals and poultry. These elements stimulate fecundity, lactation, and egg production. Despite progress in developing high yielding, disease-resistant varieties, the principal disease factors limiting production remain. These include the rusts, red leaf and other virus diseases, Helminthosporium, septoria and other foliage diseases, and root diseases. Losses from rusts alone in 1953 and 1954 averaged some $95 million annually in the three States - Iowa, Minnesota, and Wisconsin. In 1953, stem rust was the most damaging in a quarter century, and crown rust in a decade. Certain new rust races are known to exist in Canada, South America, and other areas, and can be expected to appear shortly in this country. Losses from Helminthosporium in 1947 were $100 million; from red leaf in 1949, $50 million; and from septoria in 1951, $25 million. Problems in each new disease are complicated by the existence of physiologic races or strains in each similar to those in the rusts. The immediate need for the development of varieties to resist new disease threats has resulted in the deferment of highly important basic and practical investigations on means of increasing the yield, grain quality, nutritive value, strength of straw, winter hardiness, suitability for grazing, and value as a companion crop for legumes and grass seedings. Increased soil productivity resulting from increased use of fertilizer, green manures, and improved rotations, makes stiffer strawed oats essential. Increased winter hardiness in oats is also needed if fall-sown oats are to be grown successfully for grazing and grain production.

Plan of Work: Recently developed breeding methods such as X-ray and neutron irradiation, species crosses, etc., offer real promise in solving the existing problems if additional support is made available. Basic studies would be conducted in cooperation with state experiment stations on (a) the transmission and control of red leaf and other virus diseases of oats, and on the nature of resistance, (b) the factors affecting inheritance of yield, quality, agronomic, and disease-resistance characters, (c) the development of improved breeding techniques, and (d) the nature of strength of straw in oats and on the development of outstanding sources of stiff straw to prevent lodging. Some of the research would be done by contract.

(2) Increase of $50,000 under the activity "Horticultural crops research" to strengthen research on controlling virus diseases of horticultural crops, especially deciduous fruits.

Problem and Need for Increase: Virus diseases are causing heavy losses in many deciduous fruit crops. They are especially serious in stone fruits, grapes and berries. Peaches are subject to phony disease and rosette in the southeast, peach mosaic in the southwest, peach yellows, little peach and red suture in the northeast, and "X" disease in both the northeast and far western areas. These diseases together ruin hundreds of thousands of peach trees each year. Sour cherries are generally infected with sour cherry yellows, a disease that weakens

the trees and reduces production of infected trees by about 50 percent. Sweet cherries in the west are extensively infected with the "X" disease virus, which results in production of small, worthless fruit. Some strains kill the trees. Grapes in California are subject to Pierce's disease virus, which generally kills the vines. This disease is also present in the southeast and appears to be the cause of failure of bunch type grapes when planted there. Other virus diseases, the nature and symptoms of which are not fully understood, are present in the vineyards of California. Raspberries and blackberries are also subject to virus diseases that cause serious losses in the eastern states.

Plan of Work: Research would be directed toward positive identification of these diseases in the various kinds and varieties of fruit. Methods of spread in the field would be determined and clean stocks of the varieties would be isolated and preserved. Methods of treatment of fruit plants to reduce rate of spread would be studied. Treatments to cure infected trees would be studied. At present, no curative methods for infected plants in the field are known.

Research on virus diseases of stone fruits, already under way in cooperation with several states, would be increased, especially work on sour cherry yellows in the Lake states, the main section for sour cherry production. Work would be initiated on virus diseases of grapes, both in the southeast and in California. Limited research on virus diseases of blackberries and raspberries would be initiated at the Agricultural Research Center at Beltsville.

(3) Increase of $250,000 under the activity "Entomology research" to intensify research on emergency crop insect problems as follows:

(a) Increase of $125,000 to expand research on methods of controlling Mexican fruit fly.

Problem and Need for Increase: The Mexican fruit fly is a destructive pest that attacks many kinds of fruit, including grapefruit, mangoes, peaches, and a number of other tropical or temperate-climate fruits. For many years this fruit fly has been present in northeastern Mexico. It has invaded the Rio Grande Valley of Texas annually since the late 1920's. In that area, however, the lack of fruit in a suitable stage of development causes the fly to disappear before the following winter. Recently the Mexican fruit fly has been found in northwestern Mexico close to the California border, and early in August, 1954 at San Ysidro, California. This finding has created a serious threat. The insect might become a pest in California and spread to other parts of the country. Suitable fruits are available in southern California through much of the year, favoring permanent establishment and build-up as contracted with the situation in the Rio Grande Valley of Texas.

The 1955 appropriation provides approximately $226,000 for the control of citrus black fly and Mexican fruit fly. In addition, it has been necessary to make an additional $135,000 available for control of the Mexican fruit fly from the contingency fund for "Control of emergency outbreaks of insects and plant diseases". The Service is cooperating

with the California State Department of Agriculture in the suppression of this pest, but since the control program in the Southwest will operate under new conditions, not encountered heretofore on the mainland of the United States, conditions which may be more favorable for permanent establishment and build-up of the pest, there is urgent need for research to develop promptly the most satisfactory and economical control measures.

At a meeting in Los Angeles on July 1, 1954, State officials and representatives of the fruit industries of the Southwest strongly urged expanded research on this problem. The California Experiment Station is prepared to participate actively in the research program.

Plan of Work: The proposed increase would be used for cooperative research to:

(1) Expand research on the treatment of fruits and other products to permit their shipment out of infested areas without danger of starting new infestations elsewhere (at least $12,500 would be used for a contract covering large-scale experiments with the commercial applications of the most promising commodity treatments developed in this program).

(2) Intensify studies on the development of more effective insecticides for this pest.

(3) Conduct bioclimatic studies to determine the potential threat of the pest to the various fruit areas of the United States. (The pest may not thrive in certain areas because of their climate.) Bioclimatic chambers for these studies are available and additional cabinets have been moved from Hawaii to Brownsville, Texas.

(4) Intensify work with lures to attract the files. Lures are useful both for attracting flies to poisons in control operations and for survey purposes.

(5) Study the status of various fruits as hosts of the flies and study biological control-parasites and diseases of the pest.

(b) Increase of $75,000 to intensify research on methods of controlling pink bollworm and other cotton insects.

Problem and Need for Increase: Approximately one cotton bale in seven continues to be lost to insects. During the 26-year period 1927-52 the value of the cotton destroyed by insects is estimated at $6.8 billion, or an average annual loss of $261 million, ranging from $76.9 million in 1931 to $907.9 million in 1950. Considerable progress has been made since 1947 in the development of more effective insecticides and methods of applying them. The heavy loss in 1950 occurred in spite of these better working tools. Most of this loss was from the boll weevil. This emphasizes the need for increased research to develop more effective and economical methods of controlling cotton insects

The boll weevil is still the number one pest insofar as total damage is concerned but the pink bollworm is considered an even greater

potential enemy. Prior to 1951 the pink bollworm was held fairly well in check by quarantine, regulatory and cultural control measures. For the past few years, however, weather conditions have been such that these measures were not fully effective. The most disturbing fact about the 1953 and 1954 pink bollworm infestations is that the populations continued to increase in central and eastern Texas. These are critical areas so far as further potential spread is concerned and constitute an immediate threat to cotton production in the lower Mississippi Valley and to the eastward. Research on this insect has been expanded during the past two years but is still inadequate for the job to be done. There is urgent need to develop better methods of killing pink bollworm in the field and at the gin, and to initiate or expand pathology, toxicology, chemical and biochemical studies of the pink bollworm.

Bollworms are causing far more damage to cotton now than they did a few years ago, in part because of increased acreages of legumes and other alternate host plants and in part because the new organic insecticides kill off parasites and predators that aid in holding bollworms in check. Prior to 1950 it was rare when severe bollworm damage occurred outside of Texas but now such damage occurs each year from the Atlantic to the Pacific and in some areas it is rated as the number one cotton pest.

Thrips and other early-season pests cause much greater injury to seedling cotton than is generally realized in many parts of the cotton belt. It is usually taken for granted that certain hazards accompany the germination of cotton seed and that seedling plants will be attacked by various insects; but unless the stand is destroyed or seriously reduced, the plants will survive and produce a normal crop. The fallacy of this assumption has been proved by the use of organic insecticides in some areas to control effectively the early season insects. Much work, however, needs to be done to develop better and more economical insecticides and to determine the proper timing and best methods for early-season applications in order to preserve the greatest numbers of beneficial predators and parasites and at the same time kill the highest percentages of over-wintered boll weevils.

Plan of Work: The proposed increase would be used for studies cooperative with state experiment stations in the South to:

(1) Provide additional support to the pink bollworm research program with particular emphasis on basic research in physiology, toxicology, biochemistry and the use of bioclimatic cabinets in studying the response of the insect to various climatic conditions. Also, research would be initiated on utilizing disease organisms to control the pink bollworm and other cotton insects.

(2) Expand research on the control of insects attacking cotton in the seedling stage with particular emphasis on thrips, over-wintering boll weevils, aphids, spider mites and the cotton fleahopper which often stunt seedling cotton plants, delay fruiting, and make the plant more vulnerable to late season insects and other hazards.

(3) Expand boll weevil research particularly in the South eastern States where it causes greatest damage.

(4) Provide additional support for research on the control of the bollworm, an acute problem throughout the cotton belt which has become intensified where insecticides are applied in the late season for control of the boll weevil, lygus bugs, and stink bugs. These insecticides usually reduce the natural enemies which under normal conditions aid in keeping the bollworm in check.

(c) Increase of $50,000 to conduct research on problem of insects becoming resistant to new insecticides.

Problem and Need for Increase: The number of insects which are developing resistance or immunity to the new insecticides is increasing each year. During 1953 and 1954, DDT-resistant strains of the potato beetle, cabbage looper, imported cabbage worm, grape leaf hooper, lygus bugs, and potato flea beetles have been reported. There are indications that the codling moth might also be resistant to DDT in some areas. Various species of spider mites on ormamentals, fruits and certain other crops have developed resistance to Parathion. Certain plant lice have become resistant to DDT and Parathion. The problem of resistance to various insecticides among insects affecting man and animals and household pests has also become more acute.

When a major pest develops immunity to an insecticide widely used for its control serious damage to crops results before alternate materials can be applied. Heavy losses are also experienced because of the large investment in the development, manufacture, and distribution of insecticides.

Basic research is needed to determine why certain insects have the capacity to become resistant. Such information would serve as a guide in the development, selection and use of more effective insecticides. Research on various crop pests and insects affecting livestock and man must be strengthened in efforts to anticipate resistance and to explore substitute control methods as soon as possible after it is shown that resistance has developed. Eleven advisor committees have recommended strengthening research on the resistance problem.

Plan of Work: The increase would be used to study resistant strains of insects to determine how they differ from strains which are not resistant. A portion of the funds ($5,000) would be utilized to support such studies through contract with a State institution. Studies also would be conducted to determine why certain insects have the capacity to become resistant to one type of insecticide and not to another. Work would be strengthened to develop new insecticides and to investi- the relationship between insecticidal activity and chemical structure of various materials. Where the problem of controlling resistant insects is particularly acute, as in connection with controlling truck crop and livestock pests, work would be undertaken to help develop substitute control measures.

(4) Increase of $100,000 under the activity "Soil and water conservation research", to strengthen research in watershed hydrology, especially for analysis and publication and accumulated hydrologic research data.

Problem and Need for Increase: The important and growing programs of watershed protection, flood prevention, and soil conservation carried

out by Federal and State agencies emphasize the urgent need for strengthening watershed hydrology research. The Soil Conservation Service and other Federal agencies have in recent years spent more than $100 million annually for purposes associated with the application of permanent types of conservation measures. Annual Federal expenditures for upstream flood prevention programs have been relatively small up to the present; however, the trend of Federal policy and the growing public interest in upstream control indicate that these expenditures may increase in the future. These programs need hydrologic research to guide them in their operations to avoid costly mistakes.

There is a critical need to analyze, interpret, and publish findings from accumulated hydrologic research data. Limited analysis in the past is the result of decreased funds and the attrition due to increased costs during and following the war years. Also short period hydrologic records are of little value and may be misleading. However, at this time, many records have been collected for 10 to 15 years, and have reached the point where they are profitable for analysis.

The accumulated investment in the hydrologic research activity during the past 20 years amounts to many millions of dollars. To a large extent the return on this considerable investment will not be realized until the data are analyzed and the findings are widely applied by those responsible for the progress of conservation, watershed protection, and flood prevention. Hydrologic data are urgently needed in watershed planning and in the design of structures and measures to meet the objectives of erosion control, flood prevention, sediment reduction, irrigation, and drainage. For example, analysis of these data will provide much needed information on (1) peak rates or hydrographs of flood runoff as a basis for design of structures or estimates of flood damages and benefits; and (2) seasonal or annual water yields of watersheds under widely varying conditions of soils, land use, vegetal cover, precipitation, etc., as a basis for evaluations relating to watershed programs and for establishing reliability of water supply. Although not complete, these examples illustrate some of the important hydrologic evaluations in which difficulty is encountered.

In wide areas of this country hydrologic research stations have not yet been established. Intelligent planning requires that any future research installations be baded on the full interpretation and lessons learned from previous and existing projects.

The urgent need for analysis, interpretation, and publication of the accumulated hydrologic research data has been widely recognized by numberous individuals and groups. The Soils, Water, and Fertilizer Research Advisory Committee, the National Association of Soil Conservation Districts, and the Soil Conservation Service have urged that this work be undertaken promptly.

Plan of Work: Hydrologic research data with the greatest urgency and the widest application will be analyzed and developed first. Trained analysts and computers will be assigned to each project location in

order to utilize the backgroung and experience of the staffs at such locations. In this way no new costly facilities will be required and the present staffs can be used to fullest advantage.

The results from all the research projects will be brought together and published on a National basis. The data from former research projects of the Soil Conservation Service which are not now operating will also be analyzed together with supplementary data from other available sources which have never been worked up. The summarized research data, analyses, and interpretations will be made available as rapidly as they can be brought together to the Soil Conservation Service, Soil Conservation Districts, and other agencies for use in planning watershed protection programs. They will be especially useful to the field technicians who are engaged in planning and installing water-control structures and other watershed improvements.

(5) Increase of $50,000 under the activity, "Agricultural engineering research", for developing improved equipment and low-cost structures for making, storing, and feeding silage.

Problem and Need for Increase: An efficient silo is one of the best ways of preserving grass and other forage crops for winter feed and for feeding when pastures are short. More milk or beef can be produced from an acre of grass stored as silage than as hay.

In the humid region, even with good haying weather, field and storage losses of nutrients in hay average nearly 30 percent. When rain occurs during haying, particularly with the first cutting, losses may be as much as 50 percent as compared with 20 percent for grass silage in a good silo. The potential saving through use of grass silage is very great. The silo is also effective in saving soft corn.

In the Southeastern States and other areas with summer drought, the silo is an efficient though little used means of carrying over an excess of lush spring grass for summer use. In the Great Plains and the Southwest, it could be highly effective in storing surplus feed from good crop years to times of need.

In spite of its advantages, the use of silage has increased only slowly. In 1917 there were 404,000 silos with an estimated total capacity of about 32 million tons; in 1950 the Census reported 680,000 with a total capacity of about 70 million tons.

Obstacles to greater use of silage are the cost of harvesting equipment, initial and maintenance costs of permanent silos, losses often met in temporary silos, and the labor of handling a feed which is three-fourths water. The increasing importance of grass and other forage crops requires strengthened research effort to solve these problems as quickly as possible.

Lower cost but efficient silos are needed to preserve a maximum of the crop nutrients. The time and labor required to harvest, store, and feed silages should be reduced. There is a rapidly

expanding interest in horizontal silage storages in the form of trench, partial trench and horizontal above ground silos that can be arranged for self-feeding of cattle, or mechanized handling of the silage. In many of these silos there is now a large loss due to improper construction or poor practices in harvesting and storing the silage.

Plan of Work: In cooperation with State Experiment Stations and farmers in the Southeast and the Great Plains States, various types of silos and handling equipment would be studied to determine their efficiency in relation to preservation of feed, labor requirements and costs. Feed losses through fermentation, spoilage and leaching would be studied in relation to type of silos, moisture content of silage, whether chopped or unchopped, methods of packing and covering and length of storage period. Data would be obtained for design of more efficient silos, including pressures exerted on walls, protective coatings, methods of drainage, use of new materials, economical methods of reducing excessive losses frequently experienced with horizontal silos, and arrangements for self-feeding from both upright and horizontal silos. These designs would be tested under farm conditions.

(6) Increase of $100,000 under the activity "Production economics research" to expand research to aid farmers on farm business and adjustment problems.

Need for Increase: Farmers today are faced with increasingly difficult problems in adjusting their operations to changing cost-price relationships, to changes in market outlets for their products, and to changing techniques, practices, and methods of production. Farming is now a highly commercialized operation with high capital investments, increasingly greater cash operating costs, and many more complex management problems than in former years. For average family farms, investments now range from $15,000 to $25,000 on cotton farms in the South to over $100,000 for average wheat farms and sheep ranches in the Northwest. Declining farm income and the high level of cash costs and investments are materially affecting the financial position of large numbers of farmers and are a handicap to young farmers getting established in farming.

The business side of farming is much more crucial to success on commercial farms than in former years. Farmers must therefore have access to economic research information in order to plan intelligently their necessary investments and to appraise the costs and returns they can expect from adoption of improved practices, of difference machines, of different combinations of crops, and of alternative farming systems.

The Extension Service is expanding its program of counselling with individual farm families on a complete farm unit approach. This has greatly increased the demand for more economic research information on labor requirements; feed-livestock returns; operating cost rates for machinery, fertilizer, and supplies; depreciation rates; and investment costs to assist farmers in appraising the costs and returns from alternative practices, techniques, or farming systems. Similarly, there is expanded demand from soil conservation district technicians and farmers in conservation districts for these kinds of economic research information for developing profitable conservation farm plans.

Prospective increases in demand for meat and livestock products and adjustments in farming systems where surplus crops are now produced emphasize the need for appraisal of the effect on net farm incomes of increased forage production and of grassland farming. More research is needed on the costs and returns to be expected from shifting more land to grass, on problems of feed utilization, and on the place of grass and other silage in developing more effective livestock and feeding systems in different areas, particularly in the South and the Great Plains. Appraisal of inter-area and national effects of these changes is necessary to determine their economic feasibility.

Research in this field has not kept up with the needs. Expansion of such research is needed to provide facts and analyses that not only help farmers with their problems but also provide guides to public programs affecting agriculture. Such research was recommended by the following Department Research Advisory Committees: Feed and Forage, Livestock, Dairy, Cotton, Vegetable, Rice, Production Economics, and Soils, Water and Fertilizer.

Plan of Work: This increase would provide for expansion of cooperative work with the Land-Grant Colleges that would attack the major problems found in different farming areas, with the end result of pointing out changes in farming in each area that would constitute the most efficient, profitable, sustained systems of farming in view of prospective prices, costs, and other conditions. Results of individual farm and area analyses would be combined into broader area, regional, and national appraisals of effects of suggested adjustments on total production of agricultural commodities.

The work would be organized in such a way that the results would be applicable to representative farms in each area, and could be used as basic information for (1) extension work on farm business and adjustment problems, (2) work with farmers on investments, costs and returns from different types of conservation farm plans, (3) farm credit programs of the Department and of other public and private agencies, and (4) guidance in acreage adjustment and other production programs.

(7) An increase of $247,000 under the activity "Animal and poultry husbandry research" to strengthen livestock breeding research to increase efficiency of production and to adjust product quality to market demand.

Need for Increase: Expansion of research on livestock production is needed to assure an adequate supply of meat and other livestock products for the rapidly increasing population and to increase the efficiency of producing livestock and livestock products as a primary means of adjusting over-all agricultural production to consumer demand. With an annual increase in population of from 2 to 2-1/2 million people, and the need for more meat and other livestock products for improvement of the national diet, the problem of increasing production is a critical one both now and for many years to come.

The consumption of meat and other livestock products is greatly affected by retail prices. Research which will increase the efficiency of production would operate to improve the economic position of the farmer, to lower the price of the products to the consumer, and to increase their consumption and improve the national diet.

Expansion of livestock production would stimulate the production of pasture and forage crops. This will aid in the diversion of land from soil depleting crops now in surplus to soil conserving and soil building crops which, together with the expanded livestock production, will improve soil resources.

The livestock industry is one of the most important segments of the national farm economy. The cash received by farmers from sales of livestock and livestock products was almost $17 billion in 1954, or 56% of the total cash receipts from all sales of farm products. In large measure, increased supplies of livestock and livestock products must come through more efficient and economical production methods.

It is estimated that yield per breeding unit can be increased by as much as 30 percent through the development and application of improved breeding methods which would at the same time effect a feed saving of about 15 percent. Present cooperative research with state stations has established the heritability of rate of gain, fleshing, fattening, conformation, fleece weight and quality, egg production and quality and disease resistance, thus greatly facilitating application of the best selection methods for further improvement.

Plan of Work: The increase would be used for expansion of the research at Beltsville, Maryland, other Federal stations, and for cooperative research with the State experiment stations on the development and application of new breeding techniques with beef cattle, swine, sheep and poultry. It would also provide for research on specific problems affected by inherited factors, including disease resistance, which are considered of top priority by the livestock industry.

(8) An increase of $150,000 under the activity "Dairy husbandry research" to strengthen dairy cattle breeding and feeding research to improve effiency and lower cost of milk production.

Need for Increase: Milk production per cow must be increased materially to maintain current per capita milk consumption. While milk production can be increased by larger numbers of dairy cows, increasing the yield per cow is the most efficient solution to the problem. One of the important limitations to high efficiency of milk production is the relatively poor inheritance of producing ability. Genetic improvement in cattle comes slowly, hence the need for a strengthened research program now. In addition, there is need for more emphasis on higher non-fat solids in relation to the fat in milk. Economic and nutritional requirements demand less emphasis on butter fat. No research has been carried on to breed and select dairy cows for this attribute.

Recent studies show that feed constitutes 48% of the total cost of milk production. Grain generally is the most expensive part of the milk cow ration, forage is the cheapest. By feeding greater amounts of high quality forages, feed costs can be lowered and efficiency of milk production increased. In order for the feeder to efficiently use forages he must learn how to reduce losses from poor grazing and harvesting, he must know how to produce and conserve high quality forage, and he must know what its potential feeding value is. These are problems that require much additional research.

It is known that present feed evaluation methods do not accurately indicate the energy value of forage as they do grains. Rumen microorganisms have an important place in breaking down the carbohydrate constituents in forages. Their true role in digesting forage and in the high utilization of the digestible nutrients derived therefrom is not well understood. Microorganisms while highly desirable under most conditions, may under others be an important contributing factor in nutrition or management difficulties.

The input-output relationship between forage consumption and milk production, the relation of different kinds and amounts of forages, and the supplementary effects of other feeds in milk production also require further research.

Plan of Work: The research would be conducted through laboratory experimentation and field trials and in cooperation with State experiment stations. New breeding techniques would be developed and applied. Methods would be developed, through the use of animal calorimeters, to measure more accurately the net energy content of forages and to determine the important factors that affect these values; physiological and bacteriological studies would be made of the rumen and rumen microflora to see what can be done to enhance the digestibility and utilization of nutrients in forage. Studies would be made also to establish on a feed-energy milk-energy basis the input-output relationships with cows fed different kinds and qualities of forages in varying proportions.

(9) An increase of $261,000 under the activity "Animal disease and parasite research" to reduce livestock and feed losses.

Need for Increase: Livestock losses caused by diseases and parasites are estimated at $1,900 million annually. Expansion of research to develop better methods of control or eradication would save millions of dollars to farmers in livestock and feed.

Parasites tend to become more numerous and serious as numbers of domestic animals and poultry increase. Heavy stocking on improved pastures, in many instances has proved disastrous because of parasitism. Frequently, outbreaks of parasitic diseases are mistakenly diagnosed as new diseases, or virus diseases, or ascribed to obscure causes. Such mistaken diagnoses show a strong need for studying the incidence of parasitism in cattle, sheep, swine and poultry to determine where the most fertile foci of infection are, the conditions under which parasites spread rapidly and cause heavy losses, and how to check these infestations in the early stages by a sound diagnosis.

Special emphasis should also be placed on developing methods of controlling and preventing parasitic diseases in animals and poultry.

Infectious diseases continue to take a heavy toll from livestock producers. For instance, hog cholera causes average annual losses of over $48 million in addition to the $20 million spent annually for biologics for its prevention and control. These losses and vaccination costs could be practically eliminated if the disease could be eradicated. A careful evaluation under field conditions of the feasibility of using the several biologics presently available for control of the disease is essential to a successful eradication program.

Leptospirosis of cattle and swine cause annual losses in excess of $112 million. In cattle, it causes abortions, impaired physical development, loss of weight, decreased milk production, and a mortality rate of more than 7%. In addition, the disease is a hazard to the public health. There has been little research on this disease and studies are needed to improve diagnostic procedures, determine methods of transmission, and develop safe and reliable methods of control.

In 1952, the loss from blue tongue of sheep was estimated at one million dollars. It has been possible to initiate only a minimum of research on this disease. The work should be greatly expanded to meet this serious problem. Research on other infectious diseases, including leukosis of poultry, the most destructive of all diseases that kill mature chickens, also needs to be expanded.

Noninfectious diseases, such as bloat and poisoning by insecticides, fungicides, and herbicides, have become increasingly important as agricultural practices have changes to include more legumes in pasture mixtures and more widespread use has been made of dusts, sprays, etc., to control insects, plant diseases, and weeds. A start was made in 1954 on cooperative bloat research studies, and these studies should be expanded. Research is needed to determine the insecticide residues in milk, meat and forage crops to guide the use of newer insecticides on animals and on pasture and forage crops. Since insecticides are now also offering possibilities for insect control when used by injections into domestic animals, research is needed for screening such chemicals for their toxicological effects on livestock. These studies would involve the use of isotopes.

Plan of Work: The proposed research work would be conducted at Beltsville, Maryland, other Federal stations, and cooperatively at State experiment stations. Studies would be conducted to:

a. Determine the survival time of various roundworm parasites on different types of pastures and soils under varied climatic conditions.

b. Determine the relationship between kinds of grazing crops and parasitic acquisition.

c. Determine the effect of nutrition and supplemental feeds on the resistance or susceptibility of beef and dairy cattle to parasites.

d. Develop practical methods of controlling poulty parasites in poultry yards by means of soil fumigants and other chemicals.

e. Develop a practical treatment for the removal of tapeworms and roundworms from chickens and turkeys.

f. Investigate the various factors and practices which favor the outbreaks of parasitic diseases.

g. Evaluate different methods and products for eradicating hog cholera by the use of controlled field tests.

h. Develop diagnostic tests and methods for controlling leptospirosis of cattle and swine.

i. Investigate the chemical and physical properties of the virus responsible for leukosis (lymphomatosis) of poultry.

j. Develop improved diagnostic tests for blue tongue of sheep and vaccines for immunity protection.

k. Study the toxicological effects of new insecticides and their residue as affecting livestock production.

l. Accelerate research on the physiology of animals as related to bloat.

(10) An increase of $25,000 under the activity "Territorial experiment stations" to initiate an animal husbandry research program in the Virgin Islands.

Need for Increase: In the agriculture of the Virgin Islands, the livestock industry is second in importance only to sugarcane. Large areas of the Islands are not suited to any other type of agriculture because of lack of rainfall. At present, no program of animal research is being undertaken by any agency in the Virgin Islands. As a result, the livestock of the Islands are below standard and bring low prices when marketed. A research and extension program to develop better methods of carrying livestock during the long dry season, to develop livestock types which are more resistant to tropical heat and adverse conditions, and to develop better rations could do much to improve the agriculture of the Islands.

Plan of Work: Investigations would be initiated to determine, under local conditions, cheapest sources of protein and of total dry nutrients. Locally produced legumes, imported protein concentrates, ammoniated molasses, and urea would be compared to determine the most economical sources of livestock feed. The use of different types of animals in conducting these experiments would be undertaken to determine the characteristics best adapted to local conditions. It is contemplated that all the experimental animals needed would be provided by cooperators who are vitally interested in improving their income from the livestock industry.

(11) An increase of $150,000 under the project, "Utilization Research", to expand research on cotton utilization.

Need for Increase: To improve the competitive position of cotton, expanded utilization research is urgently needed to develop improved chemical and mechanical processing techniques for cotton, to find chemical methods for imparting new and valuable properties to cotton, and to develop cotton products for specific types of markets. Increased consumption of synthetic fibers and other products keenly competitive with cotton has caused a serious cotton surplus. Consumption of man-made fibers in the United States has more than doubled in the last ten years and this increase was largely due to the extensive research designed to embody in theses fibers the qualities desired in U. S. markets. Sound, carefully selected utilization research offers the principal means by which cotton can be maintained in present uses, expanded into new uses, and into uses now being supplied by other products.

The increase is needed to strengthen work in the following fields:

(a) Research on effects of drying on cotton fiber. The nature and severity of drying procedures are important in many textile operations. In all cotton processing, drying is accomplished by the application of heat. It is recognized that severe applications of heat to cotton fibers lead to impairment of spinning qualities, but little is known about the changes which take place in the fibers as a result of overexposure to heat. The cotton industry realizes the importance of this problem and many urgent requests have been received for guidance in adapting drying conditions so that minimum dagage will be inflicted on the cotton fibers. Systematic studies are needed to determine the effects of various drying practices on the physical properties of the cotton fibers and on the chemical reactivity of the cotton cellulose, and to explore the possibility of using methods other than heat for drying.

(b) Development of improved equipment to produce more uniform cotton picker laps. Uniformity of products is a major factor which will enable cotton to meet the keen competition now offered by highly uniform synthetic fiber products. In the manufacture of cotton textiles, the most important source of non-uniformity is in the picking operation, which converts the heterogeneous mass of cotton fibers, taken from the bales, into a continuous web called the "picker lap". Any irregularities in the picker lap increase substantially during the subsequent operations and cause wide variations in the physical properties of the yarns and fabrics. The development of equipment and techniques for increasing lap uniformity will result in significant improvement of spinning and weaving efficiencies and of the quality of the resultant cotton products.

(c) Development of new and improved cotton products by chemical changes in the structure of cotton cellulose. The synthetic fibers that are competing with cotton in the textile field have gained many new markets because they possess special properties suitable for specific uses. These properties have been conferred upon them by a variety of chemical reactions leading to their production. Experience has shown that cotton

fibers can be given additional desirable properties by chemical reactions that modify the structure of the cotton cellulose. To enable cotton to maintain and improve its position in the textile field there is need to expand current research by a new approach using other chemical reactions to modify the basic fiber structure so as to increase the elasticity of the fiber and fabric and to increase their resistance to abrasion and to weather.

(d) Investigation of methods for increasing the smoothness of cotton yarns and fabrics. Aside from the usual requirements of weight and strength, smoothness or slipperiness of the fabric is of primary importance for coat and suit linings and women's slips. Rayon and other synthetic fibers have taken over these large markets because they can be produced in continuous filaments that produce smoother yarns than those spun from the naturally short cotton fibers. To restore these markets to cotton, practical low cost methods must be developed to reduce the tendency of cotton products to cling by giving them smoother surfaces. Smooth cotton yarns would also be better adapted for use in knitted fabrics.

Plan of Work: The proposed increase would be used to conduct fundamental studies on the effects of heat upon the physical and chemical properties of cotton fibers; to improve the drying procedures used in the processing of cotton so as to obtain increased processing efficiency and higher product quality; to make mechanical modifications in the equipment for producing picker laps that will result in the production of a uniform batt of highly individualized cotton fibers; to develop new chemical treatments of cotton that will confer desirable properties on the cotton fibers; to investigate several mechanical and chemical approaches to achieving smoothness in cotton yarns and fabrics; and to develop suitable methods for treating cotton fabrics of different constructions and weights to give them the smoothness desired for specific end uses. Some of the research would be conducted under contracts.

The net decrease of $435,579 under the subappropriation item, "Plant and Animal Disease and Pest Control" for 1956 consists of the following:

(12) A net decrease of $389,400 under the activity "Plant pest control" composed of:

(a) Increase of $75,000 to carry out additional responsibilities under Public Law 518, approved July 22, 1954, amending the Insecticide, Fungicide, and Rodenticide Act.

Need for Increase: Public Law 518, 83rd Congess, which amends the Federal Food, Drug, and Cosmetic Act, was approved July 22, 1954. Under its provisions, there is placed upon the Department the responsibility of determining whether pesticide chemicals for which tolerances are sought are useful for the purposes intended and whether the proposed tolerances reasonably reflect the residue likely to result from the proposed uses. The certifications of usefulness and expressions of opinions on residues must be accomplished within 30 days,

or within 60 days if due notice has been given. The work required by the Act is mostly in addition to the current registration work. Current work already extends the existing staff to the utmost.

The new functions under P. L. 518 relate to pesticides whose use results in residues in or on raw agricultural commodities used for food or feed. Quite different considerations from previous studies are required. The work on petitions will vary widely because of differences in pharmacological, phytopathological and pesticidal effects of products for which tolerances are sought. It will be necessary for various scientists, including chemists, entomologists, pharmacologists, and pathologists to evaluate voluminous residue data and data on composition, application, and effectiveness of products. The work-load on the scientific staff per petition will vary considerably. It will probably vary from four days per petition to as much as twenty or twenty-five days for the more difficult and involved cases. On an average, it is expected that a total of approximately ten days of the scientists' time will be required per petition. Industry is increasingly refining and improving its chemicals so as to develop new uses, and finding additional uses for particular chemicals. From experience with the pesticides now on the market and the number of new chemicals coming on the market each year, it is estimated the approximately 200 petitions need to be analyzed and evaluated per year. This would represent a work-load of approximately 2000 days, or approximately 8 man-years of scientific personnel. Clerical and filing assistance related to this work-load would also be required. The proposed increase is based on these requirements.

Plan of Work: The funds requested would be used to:

(1) Review petitions submitted, for the creation of a tolerance or exemption, to determine the usefulness of the specified pesticide chemical in agriculture. This function involves a chemical and biological evaluation of the data submitted by the petitioner (resulting from his own experimental effort or that of others); consideration of other related data available from scientific literature, State and Federal files, or otherwise available; and acquisition and consideration of related expert knowledge of scientists qualified in the fields involved.

(2) Evaluate the residue data contained in the petition to determine whether the tolerance proposed by the petitioner reasonably reflects the residue likely to result when the pesticide chemical is used as proposed. This responsibility requires an appraisal of the analytical methods used and a determination of the maximum residue likely to result under ordinary conditions and practical methods of removing residue.

(3) Establish and maintain coordination with the Department of Health, Education, and Welfare relative to determinations of usefulness and opinions on residues and keep current with tolerances promulgated by that Department.

(4) Establish procedures for providing a prompt administrative hearing for each applicant adversely affected by proposed certifications of usefulness, as required by P. L. 518, and prepare and present written and oral evidence to substantiate the Department's

position in such hearings, effecting prompt means of communication with regard to notice of certification, requests for extensions of time, and notice of hearings.

(5) Maintain records of applications under consideration, previous certification or refusal of certification for each chemical proposed, and complete records of chemicals and uses for which tolerances have been established by the Department of Health, Education and Welfare.

(b) Decrease of $464,400 due primarily to discontinuance or reduction of Federal participation in certain insect and plant disease control programs.

The 1956 Budget Estimates propose reductions in funds for certain of the cooperative plant and animal disease and pest control projects. These cooperative programs are undergoing constant review and an effort is being made to have the States and other cooperators assume a larger share of the cost. Discussions with the States have been initiated looking toward the development of a long range cooperative program for these control activities in line with the report on the House Subcommittee on Agricultural Appropriations. It is essential that the combined Federal-State effort be sufficient to maintain these programs at an effective level, and the reductions are proposed on the basis that the States and other cooperators should assume a larger proportion of the costs. The continuing funds provided in the estimate will be used primarily for surveys to establish boundaries of infested areas, technical assistance in organizing and conducting control programs which are carried out in support of quarantines, and to insure an acceptable degree of uniformity in the application of treatments where several States are involved.

The amounts of the reductions proposed by program are as follows:

Program	Available, 1955	Decrease	Estimate, 1956
Japanese beetle control	$427,100	- -	$427,100
Sweetpotato weevil control	210,600	-$50,000	160,600
Citrus blackfly and Mexican fruit fly control	226,200	- -	226,200
Phony peach and peach mosaic eradication	138,200	-38,000	100,200
Barberry eradication	657,000	- -	657,000
Pink bollworm control	1,213,100	- -	1,213,100
Golden nematode control	344,400	-100,000	244,400
White-fringed beetle control	681,400	-50,000	631,400
Hall scale eradication	103,700	- -	103,700
Gypsy moth control	525,800	- -	525,800
Grasshopper and Mormon cricket control	546,900	-226,400	320,500
Insect detection and advisory service	298,300	- -	298,300
Emergency outbreaks of insects and plant diseases (contingency fund)	400,000	- -	400,000
Total	5,772,700	-464,400	5,308,300

Sweetpotato weevil control (-$50,000): The proposed cooperative program would provide for (1) Federal assistance in conducting surveys to locate and delimit new infestations, (2) assistance in the eradication of outlying infestations through cultural practices or host-free zones, (3) reduced assistance in the supervision of cultural or storage practices within known infested areas, and (4) reduced assistance in enforcing existing State regulations to prevent movement of infested sweetpotatoes to uninfested areas. These functions would be continued with emphasis being placed on the detection and elimination of incipient infestations remote from the generally infested area. It is planned to have the States assume more responsibility for control work within the generally infested area.

Phony peach and peach mosaic eradication (-$38,000): This reduced program would provide for (1) assistance to States in the enforcement of quarantines regulating the production and shipment of peach nursery stock to insure its freedom from infection, (2) surveys to detect outlying infections as a basis for prompt suppressive action, and (3) reduced technical leadership where peach growers have organized area-wide control programs. Emphasis would be placed upon prevention of spread, with the States assuming greater responsibility for the control of these diseases within generally infested areas.

Golden nematode control (-$100,000): The reduced cooperative program would provide for (1) annual surveys to establish the presence or absence of golden nematode in fields on Long Island not now known to be infested, and (2) periodic surveys of other principal potato growing States.

The Department cooperates with the State of New York in the inspection and certification of commodities moving from infested areas to other parts of the country. Under the proposed reduction it is expected that the State of New York will increase its participation in the inspection and certification work. It is also expected that the State will assume full responsibility for any compensation to growers who withhold infested lands from production. The Federal share of the compensation to growers is estimated at $30,000 in 1955.

White-fringed beetle control (-$50,000): The reduced cooperative program would provide for (1) conducting surveys to determine limits of known infestations and to detect new ones as they occur, (2) enforcement of Federal and State quarantines regulating the movement of articles capable of transporting the insect to uninfested locations, and (3) reduced technical assistance in organizing and implementing control programs when necessary to prevent spread to new areas. Emphasis would be placed on the detection and suppression of outlying infestations, with the States assuming additional responsibility for work carried on within generally infested areas.

Grasshopper and Mormon cricket control (-$226,400): The proposed program would continue to provide for area-wide surveys to establish potential outbreak areas, and technical leadership in the planning and execution of jointly financed control programs undertaken on both public and privately-owned lands to suppress emergency outbreaks which cause widespread destruction of vegetation in breeding areas and are the source of migrations to distant points. It is proposed to discontinue the demonstrational activities conducted under this project. However, this work will be assumed by the State Extension Services.

The State Extension Services will expand their educational activities related to grasshopper and Mormon cricket control and in addition will be responsible for all demonstration work on these projects. Accordingly, the educational and demonstrational activities will be continued in the areas concerned. Most State Extension Services have an extension entomologist who will serve in a liaison capacity between the Agricultural Research Service and in the Extension staff, in particular the county agents, and will be directly responsible for the implementation of this work.

(13) A decrease of $46,179 under the activity "Animal disease control and eradication" composed of:

(a) A decrease of $33,079 in diagnosis, control and eradication of miscellaneous diseases.

For many years the Department has aided the States and swine procucers in investigations of outbreaks of hog cholera. Specialists in prevention and control of this disease worked with farmers to reduce losses and to prevent its spread to adjoining swine-raising areas. In recent years the services of practicing veterinarians have become more available to farmers, thus requiring less help from the Department. Accordingly, it is proposed that regular assistance in the prevention and control of hog cholera be discontinued, thus permitting a decrease of $33,079. In the event of unusually serious outbreaks of hog cholera, it is expected that the remaining funds under this project will permit the necessary assistance to producers.

(b) A decrease of $13,100 due to the transfer of responsibility for administration of the Process Butter Act to the "Meat inspection" sub-appropriation.

Administration of the Process Butter Act involves inspection in the processing plant very similar to that conducted in Federal meat inspection. Inspection of process butter is now required at only one plant in the United States which is located in Birmingham, Alabama. The meat inspection force now available in Birmingham is sufficiently flexible that the inspection of process butter can be absorbed without additional cost. Therefore, it is proposed to transfer the administration of the Process Butter Act to the sub-appropriation "Meat inspection" thereby effecting a saving of $13,100 in activity "Animal Disease Control and Eradication". The same inspection for process butter would be performed as in the past.

EXPANDED BRUCELLOSIS PROGRAM

(Conducted with funds from Commodity Credit Corporation)

Legislative Authorization

Under Section 204(e) of Title II of the Agricultural Act of 1954, Public Law 690 approved August 28, 1954, provision is made for the transfer of not to exceed $15,000,000 annually for a period of two years from funds available to the Commodity Credit Corporation to the item "Plant and Animal Disease and Pest Control" of the appropriation "Salaries and Expenses, Agricultural Research Service," for the purpose of accelerating the brucellosis eradication program and increasing the number and amount of indemnities as an aid to the stabilization of the dairy industry through reduction in the number of dairy cattle and attendant reduction in milk and dairy products. The expanded program will result in culling unprofitable cows from dairy herds.

Initiation of Program

On September 23, 1954, the Secretary approved the initiation of an accelerated brucellosis eradication program for the current fiscal year in the amount of $10,000,000. Immediately thereafter meetings were held with State and Federal officials, and others interested, for the purpose of determining the most effective program to meet the needs in each State. It was decided to employ local veterinarians to conduct testing operations on a per diem or fee basis. This policy of utilizing the services of veterinarians familiar with local conditions and problems has proven very satisfactory in the past in connection with the tuberculosis and brucellosis eradication programs. Local veterinarians have now been engaged and the program is in active progress.

It is estimated that in the operation of the 1955 program, approximately 16,000,000 head of cattle will be tested of which approximately one-half will be tested under regular funds and one-half under funds available for the accelerated program. It is also estimated that indemnity payments will be made for approximately 225,000 reactors at an average of $25 each, and that an additional 100,000 reactors will be slaughtered without indemnity payment. To receive indemnity, owners must dispose of reactors promptly, but some, for economic reasons, may prefer to retain the reactors under one of the approved plans in the program which permits delayed slaughter without indemnity.

Indemnity per Animal

On October 8, 1954, the existing regulations were amended to pay maximum federal indemnity payments of $25 for grade animals and $50 for purebreds, a change from $9 and $18. This restored the maximum payments in effect prior to September 23, 1953.

Financial Requirements

To determine the financial requirements, information was obtained from each State on the level at which the expanded program would be operated. Based on an analysis of this information, the Secretary on January 7, 1955, approved an adiitional $2,700,000 for the program, making a total of $12,700,000 for the fiscal year 1955 as compared with $10,000,000

reflected in the 1956 Budget as reimbursable obligations under the item "Plant and animal disease and pest control". The estimated distribution of the funds required for the program is shown in the following table:

	Indemnity Payments	Fee Testing	Operating Costs	Total
Total program	$5,635,569	$6,105,621	$4,733,510	$16,474,700
Less, direct obligations under Salaries and Expenses, ARA	548,500	80,000	3,146,200	3,774,700
Cost of accelerated program	5,087,069	6,025,621	1,587,310	12,700,000

Fee testing includes such items as vaccinating, tagging, branding, and appraising of animals. Operating costs include such items as the purchase of vaccine, mobile laboratories and other needed equipment, and salaries and travel expenses of field employees engaged in the inspection and testing of animals.

An appropriation to reimburse Commodity Credit Corporation for the costs of this program incurred in fiscal year 1955 will be requested as a part of the 1957 Budget Estimates.

State Participation

A comparison of the funds provided for fiscal year 1955 by the Federal Government and cooperating States and counties follows:

	Federal Government	Cooperators
Indemnity payments	$5,635,569	$1,368,978
Operating funds	10,839,131	8,961,109
Total	16,474,700	10,330,087

Each State has been informed of the amount of Federal funds available for the program in order that it may proceed with the planned cooperative program. It is anticipated that in several States, cooperating State officials will request their legislatures at the forthcoming sessions to provide additional State funds for the brucellosis eradication program.

1956 Program

It is presently estimated that $15,000,000 will be transferred from the Commodity Credit Corporation for this program in the fiscal year 1956, for which an appropriation to reimburse the Corporation will be required in 1958.

The following table indicates the estimated distribution by States for both Federal and State funds for the fiscal year 1955.

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE

Brucellosis Eradication

Fiscal Year 1955

State	Federal Funds				State Funds a/		
	Indemnity Payments	Fee Testing	Operating Costs	Total	Indemnity Payments	Operating Costs	Total
Alabama	$ 145,000	$ 102,563	$ 78,163	$ 325,726	--	$ 45,000	$ 45,000
Arizona	3,750	19,533	22,337	45,620	--	33,000	33,000
Arkansas	75,000	121,025	148,081	344,106	--	50,000	50,000
California	60,000	--	32,762	92,762	--	571,248	571,248
Colorado	25,000	57,397	67,588	149,985	--	12,195	12,195
Connecticut	201	21,758	6,680	28,639	$ 3,000	80,265	83,265
Delaware	38,211	6,754	18,536	63,501	35,000	25,500	60,500
Florida	16,713	28,240	118,211	163,164	7,000	74,380	81,380
Georgia	105,000	144,593	68,895	318,488	3,000	143,000	146,000
Idaho	69,000	105,919	65,125	240,044	2,500	96,400	98,900
Illinois	400,000	330,049	82,440	812,489	--	611,788	611,788
Indiana	230,000	192,179	57,361	479,540	--	119,575	119,575
Iowa	244,999	104,238	112,483	461,720	297,000	305,594	602,594
Kansas	--	--	--	--	--	50,000	50,000
Kentucky	75,000	103,207	37,586	215,793	--	80,000	80,000
Louisiana	225,000	101,323	114,091	440,414	--	258,355	258,355
Maine	30,963	49,610	62,906	143,479	36,000	44,000	80,000
Maryland	84,605	15,758	30,141	130,504	42,103	63,000	105,103
Massachusetts	--	24,457	11,824	36,281	--	40,000	40,000
Michigan	187,776	169,331	117,111	474,218	5,000	180,000	185,000
Minnesota	395,544	982,702	430,185	1,808,431	105,000	873,500	978,500
Mississippi	55,000	214,242	74,503	343,745	--	92,100	92,100
Missouri	530,400	346,628	122,499	999,527	--	139,038	139,038
Montana	--	258,460	196,878	455,338	--	195,000	195,000
Nebraska	412,998	482,443	67,394	962,835	20,000	100,000	120,000
Nevada	25,000	25,685	41,724	92,409	--	41,000	41,000
New Hampshire	12,008	36,680	16,476	65,164	14,000	104,535	118,535
New Jersey	36,700	4,425	52,716	93,841	36,000	130,710	166,710
New Mexico	7,699	24,665	56,357	88,721	5,000	3,000	8,000
New York	718,750	171,706	59,516	949,972	--	1,044,384	1,044,384
North Carolina	31,229	--	61,085	92,314	15,000	55,000	70,000
North Dakota	5,953	19,583	94,119	119,655	10,000	174,500	184,500
Ohio	--	67,310	83,250	150,560	--	245,000	245,000
Oklahoma	--	121,747	65,092	186,839	--	75,000	75,000
Oregon	94,407	113,710	142,194	350,311	35,000	150,000	185,000
Pennsylvania	384,771	238,956	62,267	685,994	350,000	900,000	1,250,000
Rhode Island	18	18,877	917	19,812	3,500	17,307	20,807
South Carolina	18,203	14,075	109,005	141,283	10,000	66,437	76,437
South Dakota	42,608	54,130	76,689	173,427	20,000	10,000	30,000
Tennessee	123,292	55,126	70,821	249,239	76,000	105,500	181,500
Texas	--	--	16,254	16,254	--	46,330	46,330
Utah	35,000	23,614	57,102	115,716	--	30,000	30,000
Vermont	25,000	54,203	44,160	123,363	--	121,000	121,000
Virginia	25,000	141,411	17,568	183,979	--	162,450	162,450
Washington	92,960	55,791	179,840	328,591	70,000	200,000	270,000
West Virginia	23,207	62,495	38,928	124,630	10,000	98,000	108,000
Wisconsin	484,543	738,522	252,740	1,475,805	145,875	800,000	945,875
Wyoming	25,000	50,502	44,728	120,230	--	22,500	22,500
Puerto Rico	14,061	29,999	60,870	104,930	13,000	75,518	88,518
District of Columbia	--	--	885,312	885,312	--	--	--
	5,635,569	6,105,621	4,733,510	16,474,700	1,368,978	8,961,109	10,330,087
Less direct obligations	-548,500	-80,000	-3,146,200	-3,774,700			
Estimated reimbursable obligations under expanded program	5,087,069	6,025,621	1,587,310	12,700,000			

a/ These contributions of State funds do not reflect the increased State participation due to the accelerated program.

CHANGES IN LANGUAGE

The estimates include proposed changes in the language of this item as follows (new language underscored; deleted matter enclosed in brackets):

For expenses necessary to perform agricultural research relating
1 to production and utilization, to control and eradicate [insect] pests and plant and animal diseases, and to perform related inspection, quarantine and regulatory work, and meat inspection: *** Provided further, That appropriations hereunder shall be
2 available for uniforms, or allowances therefor, as authorized by the Act of September 1, 1954 (68 Stat. 1114):

Research: For research and demonstrations on the production and utilization of agricultural products, and related research and services, including administration of payments to State Agri-
3 cultural Experiment Stations; [$35,353,000, of which not to exceed $20,000 shall be available for the construction of an office and a laboratory building at the Southeastern Tidewater Field Station, Fleming, Georgia, and of which not to exceed $28,000 shall be available for the construction or acquisition of the necessary lands and buildings for a pecan research laboratory at Albany, Georgia, and of which not to exceed $100,000 shall be available for the construction of a cotton ginning laboratory in the Southeast, including acquisition of necessary land] $37,684,000.

Plant and animal disease and pest control: For operations and
4 measures to control and eradicate [insect] pests and plant and animal diseases and for carrying out assigned inspection, quarantine and regulatory activities, as authorized by law; [$17,689,579] $17,254,000, of which $400,000 shall be apportioned for use pursuant to section 3679 of the Revised Statutes, as amended, for the control of outbreaks of insects and plant diseases under the joint resolution approved May 9, 1938 (7
5 U.S.C. 148-148e), and the Act of August 13, 1954 (Public Law 586), to the extent necessary to meet emergency conditions: Provided further, That no part of this appropriation shall be used to pay the cost or value of trees, farm animals, farm crops, or other property injured or destroyed as a result of plant insect and disease control activities except potatoes and tomatoes as authorized under the Golden Nematode Act: ***

Meat inspection: For carrying out the provisions of laws relating to Federal inspection of meat and meat-food products
6 and the applicable provisions of the laws relating to process or renovated butter; $14,325,000.

The first and fourth changes in language delete the word "insect" for the sole purpose of making clear that the language covers control work on noxious weeds, as well as on insect pests. This change would not affect in any way the nature and scope of work performed.

The second change proposes to insert language authorizing the use of these appropriations for the payment of uniform allowances pursuant to Title IV of Public Law 763, approved September 1, 1954. Plant quarantine inspectors have been required by regulation to wear uniforms for a number of years. It is proposed to pay a uniform allowance for the 310 positions affected by the law.

The third change in language deletes a non-recurring provision in the 1955 Appropriation Act to construct or acquire three field laboratories. It is contemplated that these laboratories will be constructed in 1955, and therefore, this provision will not be necessary in 1956.

The fifth change proposes to insert reference to Public Law 586, approved August 13, 1954, which provides authority for carrying out in Canada and Mexico, in cooperation with such countries, those emergency insect and plant disease control activities under the joint resolution of May 9, 1938, which are necessary to protect the agriculture of the United States.

The sixth change proposes to insert new language in order to include provision for the activities now conducted under the subappropriation "Plant and animal disease and pest control" in administering the applicable provisions of the Act of May 9, 1902 (26 U.S.C. 2325, 2326(c)), relating to process or renovated butter, as amended, and the Act of May 23, 1908 (21 U.S.C. 94(a)), insofar as it relates to the exportation of process or renovated butter. It is proposed to carry on such activities in 1956 under the subappropriation "Meat Inspection."

SUPPLEMENTARY PROJECT STATEMENT

(The following schedule reflects a more detailed analysis of the obligations shown in the regular project statement)

Project	1954	1955 (estimated)	1956 (estimated)
RESEARCH:			
Crop Research:			
Field Crops Research: (Production, breeding, disease, and quality investigations):			
Cereals	1,309,008	1,598,200	1,648,200
Cotton and other fibers	654,581	698,500	773,500
Forage	1,058,449	1,162,000	1,434,000
Rubber	34,605	34,800	34,800
Sugar	712,083	713,000	713,000
Tobacco	351,596	344,500	344,500
Drug, oil, insecticide, tannin, flavoring, hops and special product plant investigations	133,805	135,200	135,200
Weed control investigations	332,789	349,700	431,700
Subtotal	4,586,916	5,035,900	5,514,900
Horticultural Crops Research: (Production, breeding, disease, and quality investigations)			
Deciduous fruits	460,077	462,800	512,800
Citrus, avocado and other subtropical fruits	264,411	266,700	266,700
Nuts	326,472	321,900	321,900
Vegetables	653,364	750,400	750,400
Potatoes	178,048	180,800	180,800
Plants for landscaping and ornamental purposes, and farm windbreaks	315,001	374,100	374,100
Plant introduction, testing and maintenance of basic stocks	454,235	450,000	450,000
Investigations to reduce crop damage caused by nematodes	142,240	244,500	244,500
Basic studies of plant growth and development	98,910	150,600	150,600
Research on plant disease epidemics and the identification of disease organisms	132,087	133,400	133,400
National Arboretum	178,476	161,100	161,100
Subtotal	3,203,321	3,496,300	3,546,300

Project	1954	1955 (estimated)	1956 (estimated)
RESEARCH -- continued:			
Entomology Research:			
Fruit insects	781,221	799,100	929,100
Truck and garden insects	480,781	508,700	518,700
Cereal and forage insects	555,055	579,900	579,900
Cotton insects	433,870	397,300	472,300
Bee keeping and insect pathology	235,830	262,500	262,500
Insects affecting man and animals	569,041	559,000	569,000
Insect identification and parasite introduction	321,041	321,600	321,600
Pesticide chemicals	409,045	485,700	510,700
Subtotal	3,785,884	3,913,800	4,163,800
Total, Crop Research	11,576,121	12,446,000	13,225,000
Farm and Land Management Research:			
Soil and Water Conservation Research:			
Investigations in soil and crop management and water management on farms related to crop production:			
Humid regions	781,476	862,200	862,200
Irrigated and dry land regions	1,310,308	1,413,800	1,413,800
Soil improvement, plant nutrition and salinity control investigations	592,514	643,700	643,700
Fertilizers and their improvement	342,655	348,300	348,300
Investigations of the management of agricultural watersheds for soil and water conservation and the prevention of flood and sediment damage	370,144	377,200	477,200
Subtotal	3,397,097	3,645,200	3,745,200
Agricultural Engineering Research:			
Farm power and machinery investigations	425,508	495,700	501,700
Farm structures and related investigations	259,398	257,300	301,300
Mechanical preparation and conditioning of farm products	427,902	541,600	541,600
Farm electrification investigations	204,051	215,100	215,100
Subtotal	1,316,859	1,509,700	1,559,700

Project	1954	1955 (estimated)	1956 (estimated)
RESEARCH -- continued:			
Production Economics Research:			
Economics of production	1,247,712	1,369,100	1,469,100
Total, Farm and Land Management Research	5,961,668	6,524,000	6,774,000
Livestock Research:			
Animal and Poultry Husbandry Research:			
(Breeding, feeding, management, and meat quality investigations):			
Swine	345,575	361,900	414,900
Sheep and goats	409,875	411,200	449,200
Horses and mules	4,915	5,000	5,000
Beef and dual-purpose cattle	619,471	666,800	735,800
Poultry	745,940	759,500	846,500
Fur animals	102,741	102,500	102,500
Subtotal	2,228,517	2,306,900	2,553,900
Dairy Husbandry Research:			
Dairy cattle breeding, feeding and management investigations	591,055	590,200	665,200
Nutrition and physiology investigations	397,042	395,700	470,700
Dairy herd improvement investigations	282,538	295,600	295,600
Subtotal	1,270,635	1,281,500	1,431,500
Animal Disease and Parasite Research:			
Cattle	766,187	858,100	970,200
Swine	470,178	430,800	500,700
Sheep and goats	133,941	168,100	207,100
Horses	13,274	16,000	16,000
Poultry	301,513	399,200	439,200
Fur animals	41,988	43,300	43,300
Other parasite investigations	64,597	69,900	69,900
Treatment for parasites	113,587	118,200	118,200
Subtotal	1,905,265	2,103,600	2,364,600
Total, Livestock Research	5,404,417	5,692,000	6,350,000

Project	1954	1955 (estimated)	1956 (estimated)
RESEARCH -- continued:			
Administration of Payments to States, and Territorial Research:			
State Experiment Stations Research:			
Administration of grants and coordination of research with States	190,257	177,000	177,000
Territorial Experiment Stations Research:			
Federal experiment station, Puerto Rico	159,835	169,900	169,900
Virgin Islands agricultural program	95,855	100,900	125,900
Research on agricultural problems of Alaska	283,966	284,200	284,200
Subtotal	539,656	555,000	580,000
Total, Administration of Payments to States, and Territorial Research	729,913	732,000	757,000
Human Nutrition and Home Economics Research:			
Human Nutrition Research:			
Utility of foods for nutrition	603,011	602,000	602,000
Food management	407,636	482,000	482,000
Subtotal	1,010,647	1,084,000	1,084,000
Home Economics Research:			
Textiles and clothing	202,928	203,000	203,000
Housing and household equipment	138,952	139,000	139,000
Subtotal	341,880	342,000	342,000
Total, Human Nutrition and Home Economics Research	1,352,527	1,426,000	1,426,000
Utilization Research:			
Cereal and forage crops	1,148,702	1,406,900	1,406,900
Cotton and other fibers	1,271,089	1,518,400	1,668,400
Fruits and vegetables	1,884,415	1,935,800	1,935,800
Oilseeds	990,780	1,144,100	1,144,100

Project	1954	1955 (estimated)	1956 (estimated)
RESEARCH -- continued:			
Sugar and special plants	890,365	864,900	864,900
Poultry, dairy, and animal products	1,532,223	1,891,400	1,891,400
Agricultural residues	238,209	240,500	240,500
Total, Utilization Research	7,955,783	9,002,000	9,152,000
Above amounts for Utilization Research distributed by regions and commodities as follows:			
Northern Utilization Research:			
Corn, wheat and other cereal crops	914,008	1,091,800	1,091,800
Soybean and other oilseeds	399,268	480,700	480,700
Sugar and syrups	13,612	16,000	16,000
Agricultural residues	238,209	240,500	240,500
Subtotal	1,565,097	1,829,000	1,829,000
Southern Utilization Research:			
Rice	24,589	25,600	25,600
Cotton	1,178,367	1,361,400	1,511,400
Fruits and vegetables	190,419	197,600	197,600
Cottonseed, peanuts and other oilseeds	572,355	641,600	641,600
Sugars, syrups and Naval stores	293,426	300,000	300,000
Subtotal	2,259,156	2,526,200	2,676,200
Eastern Utilization Research:			
Cereal and forage crops	19,159	21,800	21,800
Fruits and vegetables	435,993	446,300	446,300
Oilseeds	19,157	21,800	21,800
Sugars, syrups, tobacco, tanning materials and special plants	512,419	468,700	468,700
Poultry, dairy and animal products	1,177,689	1,531,600	1,531,600
Subtotal	2,164,417	2,490,200	2,490,200
Western Utilization Research:			
Wheat, rice and forage	190,946	267,700	267,700
Wool and mohair	92,722	157,000	157,000
Fruits and vegetables	1,258,003	1,291,900	1,291,900
Sugars and syrups	70,908	80,200	80,200
Poultry products	354,534	359,800	359,800
Subtotal	1,967,113	2,156,600	2,156,600

Project	1954	1955 (estimated)	1956 (estimated)
RESEARCH -- continued:			
Total, Utilization Research	7,955,783	9,002,000	9,152,000
Total, Research	32,980,429	35,822,000	37,684,000
PLANT AND ANIMAL DISEASE AND PEST CONTROL:			
Plant Disease and Pest Control:			
Plant Pest Control:			
Japanese beetle	425,426	427,100	427,100
Sweetpotato weevil	219,231	210,600	160,600
Citrus blackfly and Mexican fruitfly	234,084	226,200	226,200
Phony peach and peach mosaic	133,258	138,200	100,200
Barberry eradication	617,971	657,000	657,000
Pink bollworm	1,197,475	1,213,100	1,213,100
Golden nematode	335,476	344,400	244,400
White-fringed beetle	673,064	681,400	631,400
Hall scale eradication	105,385	103,700	103,700
Gypsy moth	502,423	525,800	525,800
Grasshopper and mormon cricket	517,579	546,900	320,500
Insect detection and advisory service	366,827	298,300	298,300
Emergency outbreaks of insects and plant diseases (contingency fund)	386,581	400,000	400,000
Insecticide, Fungicide, and Rodenticide Act	574,643	508,000	583,000
Subtotal	6,289,423	6,280,700	5,891,300
Plant Quarantine	2,671,532	2,691,300	2,691,300
Total, Plant Disease and Pest Control	8,960,955	8,972,000	8,582,600
Animal Disease and Pest Control:			
Animal Disease Control and Eradication:			
Eradicating tuberculosis	1,931,919	2,075,700	2,075,700
Eradicating brucellosis (Bangs disease)	3,677,084 a/	3,774,700 a/	3,774,700
Eradicating scabies	171,729	174,500	174,500
Eradicating cattle ticks	379,259	386,200	386,200
Diagnosis, control and eradication of miscellaneous diseases	129,285	164,579	131,50

Project	1954	1955 (estimated)	1956 (estimated)
PLANT AND ANIMAL DISEASE AND PEST CONTROL -- continued:			
Supervision over interstate movement of livestock	874,057	872,900	872,900
Administration of the Process Butter Act	12,193	13,100	- -
Subtotal	7,175,526	a/ 7,461,679	a/ 7,415,500
Sub			
Animal Quarantine:			
Import-export inspection and quarantine	713,621	754,159	754,159
Control of manufacture, importation, shipment, and marketing of viruses, serums, toxins, etc.	520,782	501,741	501,741
Subtotal	1,234,403	1,255,900	1,255,900
Total, Animal Disease and Pest Control	8,409,929	8,717,579	8,671,400
Total, Plant and Animal Disease and Pest Control	17,370,884	17,689,579	17,254,000
MEAT INSPECTION:			
Meat Inspection	14,160,173	14,325,000	14,325,000
Total available or estimate	64,511,486	67,836,579	69,263,000

a/ In addition, it is estimated that advances will be made from the Commodity Credit Corporation, totaling $12,700,000 in 1955 and $15,000,000 in 1956, to accelerate the brucellosis eradication program pursuant to Title II of the Agricultural Act of 1954, approved August 28, 1954.

STATUS OF PROGRAM

The Agricultural Research Service conducts fundamental and applied research relating to the production and utilization of agricultural products, and conducts those control and regulatory programs of the Department which involve enforcement of plant and animal quarantines, the control of diseases and pests of animals and plants, meat inspection, and related work.

It carries out the Department's physical and biological science research in the fields of crops, farm and land management, livestock, human nutrition and home economics, and utilization.

Research is conducted at the 12,000-acre Agricultural Research Center, Beltsville, Maryland, where many projects of the Agricultural Research Service and other agencies are under way, and at numerous locations in the States, Territories and Possessions, and in foreign countries. A large part of the research is in cooperation with State Agricultural Experiment Stations and other public and private agencies. Research is also conducted under contract with various public and private agencies and institutions.

Plant and animal disease and pest control programs are conducted to prevent introduction into the United States of pests and diseases of foreign origin, to prevent the spread interstate of those within the country, and to control and eradicate them where found. Extensive programs are conducted at numerous locations in all States and Territories on farms, ranches, sea, air and border ports of entry, public stockyards, establishments licensed under the Virus-Serum-Toxin Act, etc.

Work also includes enforcement of the Federal meat inspection laws which assures production of disease-free, clean, and wholesome meat and meat products for both civilian and military use and for foreign commerce. This is accomplished by supervising slaughtering and meat processing operations at meat packing plants, application of controls over imported meats to assure the same protection as in the case of meats produced domestically, and a system of certification of meats for export to keep foreign markets open to American meats. Inspection of process butter is also conducted under the Process Butter Act.

CROP RESEARCH

Current activities: Investigations are conducted on the production and improvement of field and horticultural crops; on the control of crop diseases, nematodes, and weeds; on the control of injurious insects affecting farm production, and on the utilization of beneficial insects; on chemicals, including insecticides, fungicides, nematocides, and herbicides, for the control of crop pests and the development and testing of new formulations. Plant explorations are made to introduce new plants and strains as new crops or for breeding superior varieties. The National Arboretum, located in the District of Columbia, is operated.

Selected Examples of Recent Progress:

Field Crops Research:

1. Use of male-sterile corn plants in production of hybrid seed expanded. The use of male sterility in the commercial production of hybrid seed corn is rapidly expanding. It eliminates the need for hand detasseling of the plants used as female parents in the production of hybrids. Research is being devoted to the transfer of male sterility to commercial breeding lines, to the identification of male-fertile genes, and to the transfer of these genes to commercial lines used as male parents in the production of hybrid seed corn. Although a number of inbred lines have been found to be good sources of male-fertile genes, the work of transferring these genes to other lines is still incomplete. Blending of seed produced on male-sterile and normal male-fertile plants is essential in order to provide pollen in farmers' fields.

2. Hard winter wheat resistant to mosaic released in Oklahoma. A new variety of hard winter wheat called Concho, developed in cooperation with the Oklahoma station, is quite resistant to streak mosaic as well as to the soil-borne mosaic virus. Virus mosaic diseases of wheat recently have been found to be widespread in the Great Plains. These diseases are relatively new in the Midwest. At least two mosaic diseases have been found: a soil-borne disease similar to or identical with that found in the Eastern States; and the streak mosaic, which is not carried over in the soil but is transmitted from year to year by a very small mite that feeds on volunteer wheat and certain grasses and carries the disease from these to nearby fields. Possible control methods include destruction of volunteer wheat and breeding resistant varieties. Several hundred varieties of wheat of domestic origin and from the world collection of some 13,000 entries have been tested for resistance. About 20 which were found to have moderate resistance are being subjected to additional tests.

3. Improved grain sorghums to be made available for feed and industry. Before 1951, grain sorghums in this country did not have a yellow endosperm or contain an appreciable amount of carotene, the precursor of vitamin A. Cattle fed for extended periods during the winter on sorghum fodder and grain sometimes suffered from vitamin A deficiency, as indicated by night blindness. In 1951, a Department agronomist discovered Short Kaura in Nigeria, a variety with a yellow endosperm similar to that in corn. Short Kaura was crossed with American varieties growing in tests in Nigeria, and the crossed seeds were sent to Lincoln, Nebraska, for growing in the greenhouse in 1952. During 1953 and 1954 progenies from these crosses have been intercrossed with other domestic varieties to introduce the yellow endosperm character into our commercial crops.

4. New smooth leaf cottons released to breeders. Work at the Delta Branch Experiment Station, Stoneville, Mississippi, has shown that leaf trash is significantly reduced in smooth leaf types, and leaf fragments from smooth leaf types can be more easily removed from the lint. In 1945, an experimental variety known as "Delta Smooth Leaf" was released at Stoneville, but it could not compete with commercial cotton in yield. After further research, two smooth-leaf lines, known as SLS 1000 and SLS 1003, have been developed which possess good plant types, high yielding potentials and earliness. However, since the seed cotton shatters and the fiber is somewhat weak and short, further selections are being made to eliminate these undesirable characteristics.

 A new type of smooth leaf, known as D2 smoothness, transferred from a wild American species, differs from Delta smooth leaf in that the stems, as well as the leaves are smooth. D2 smoothness is caused by one dominant gene, which can be transferred into commercial cotton without any apparent deleterious effect upon the agronomic or fiber properties. D2 smoothness will be released to breeders during 1954.

5. Tests of new chemical for cotton defoliation continued. Amino triazole, a herbicide, shows promise of becoming a triple purpose harvest-aid chemical for cotton. Research during 1952 and 1953 in Arizona, California, Mississippi, and Texas has demonstrated that it can be used alone to defoliate cotton, that it will retard or reduce the amount of regrowth, and that it can be used with other defoliants to increase leaf-fall efficiency under conditions where defoliation is difficult. Preliminary tests have shown that it is not dangerously toxic to warm-blooded animals and, so far, the chemical has not been found to affect the viability of seed produced by treated plants. Amino triazole will be available commercially in 1954 for only limited-scale applications, since accurate guides for its use on cotton are yet to be developed through research.

6. Improved pasture as supplement to piney-woods range shown to be more practical for increasing cattle weight than converting timber land to grazing land. In range studies during the summer of 1953 at Alapaha, Georgia, cooperative with the Forest Service, calves on improved pastures gained 471 pounds, or 87 pounds more than calves of the same age on native piney-woods range. Their mothers gained 26 pounds on the improved pastures, but lost 162 pounds on the native range. The improved pasture in these studies consisted of either Dallis grass-white clover or Coastal Bermuda-white clover. The use of improved pasture to supplement the native range is believed to be more practical than attempting to convert range land already stocked with timber into improved grazing land by overseeding.

7. Pilgrim, a new variety of white clover, released to growers. A new variety of a Ladino-type white clover, named Pilgrim, was released to growers in 1953. It was developed from 21 clones, all but one of which came from seed collected in the Northeastern States. Nineteen

were evaluated during a period of years at the U.S. Regional Pasture Research Laboratory in Pennsylvania, one at the New Jersey Agricultural Experiment Station, and the remaining one was developed and selected at the Canadian Central Experimental Farm at Ottawa. Several additional State Agricultural Experiment Stations and the Soil Conservation Service cooperated in the final stages of developing the new variety. Pilgrim has persisted longer and has produced a much higher proportion of giant type off-spring than most lots of certified Ladino clover in tests throughout the Northeastern United States. Breeder seed is being produced by the Washington Agricultural Experiment Station.

3. New techniques facilitate rubber research program. The testing of young guayule seedlings grown in the greenhouse for rubber content instead of older field grown seedlings is speeding up the comparison of new selections. Greenhouse-grown 2-year-old cuttings of selection N595 had as much as 9.21 percent rubber as compared with 2.59 percent in the "standard" variety 65-X. This is the highest rubber content recorded for greenhouse-grown guayule plants.

It has also been found that the germination rate of guavule seed was greatly improved by exposure to light. Fresh guayule seed after 84 days of storage, when untreated had a germination rate of 50 percent. This rate was increased to 87 percent when given the standard clorox treatment in conjunction with 4 days of exposure to direct sunlight during germination, before covering the seed with sand or soil.

9. Monogerm hybrid sugar beet an aid in eliminating hand thinning. The mechanical harvesting of sugar beets is so well developed that the greatest need now is to mechanize spring operations in order to have complete mechanization of all field practices. Monogerm beet seed, developed from a monogerm race discovered in 1948, promises to be a material aid in eliminating the necessity for hand work in the thinning operation. Commercial varieties of hybrid beets with the monogerm character are in production, and their yield of roots and gross sugar was good in both 1952 and 1953.

10. Streptomycin controls tobacco blue mold and wildfire diseases. During the past year, experiments conducted at Beltsville and in North Carolina with blue mold disease of tobacco showed that streptomycin sulfate applied as a spray at the rate of 100 to 200 parts per million controlled the disease effectively without injury to plants. Tests on wildfire control were conducted in Tennessee, and the results show that streptomycin-sulfate spray is highly effective at the same rates used for blue mold and that it gave consistently better control than the standard copper spray treatments. Limited tests with a streptomycin dust indicated that this from of the antibiotic was much less effective than the liquid form. In both the blue-mold and wildfire experiments there were strong indications that streptomycin sulfate not only protects against infection, but also retards disease development and promotes plant recovery, even after general plant bed infection has occurred.

11. New varieties of burley tobacco developed which are resistant to black shank. Burley 11A and Burley 11B, the first black-shank resistant varieties of burley tobacco, were developed in cooperation with the Tennessee Agricultural Experiment Station and seed was made available for growers in 1954. The new varieties were developed from breeding materials originally received from the Virginia Agricultural Experiment Station. Tests conducted in Tennessee, North Carolina, and Virginia in 1952 and 1953 have shown that the new burley varieties possess resistance higher than is now available in flue-cured tobacco in varieties such as Dixie Bright 101 and Oxford 1-181. Burley 11B has slightly higher resistance than Burley 11A, though this is only apparent under the most severe disease conditions. Under ordinary farm conditions, where a susceptible variety was almost completely destroyed by the disease, both Burley 11A and Burley 11B have survived 97 to 100 percent. Both varieties have good resistance to black root rot, and limited tests indicate they also have good resistance to the fusarium wilt disease. Burley 11A and 11B have given yields and returns per acre that are quite comparable to those obtained with such varieties as Kentucky 16, Burley 1 and Burley 2 in absence of black shank. Burley 11B yields about 5 percent less than 11A.

12. New chemical, amizol, controls nutgrass. Experiments in Georgia indicate that a new chemical - 3-amino, 1,2,4-triazole (amizol) - is absorbed and translocated throughout the underground rhizome system of tuber-chains, killing the plants. The selective killing action of amizol appears to be the result of its property of inhibiting chlorophyll production in certain plant species. The new compound also looks promising for the control of Johnson grass, quackgrass, and other weeds. This herbicide was highly selective as a pre-emergence treatment and also showed promise as a fortifying agent in general weed-killing sprays.

13. Forage yields increased by use of 2,4-D. In a thorough and intensive comparison of several weed-control methods in pastures in Nebraska, reseeding, mowing, and the use of 2,4-D were compared for three years. In these studies, the use of 2,4-D to control weeds in native pastures resulted in a 60 percent increase in desirable grasses and in an 80 percent reduction of weeds without any mowing or reseeding. The use of 2,4-D was much more effective for control of weeds than mowing. Use of 2,4-D also compared favorably with reseeding of improved cultivated grasses as a method of controlling weeds and increasing forage yields.

Horticultural Crops Research:

1. Several new improved fruit varieties released in 1954 for commercial use. These include four high-quality, well-colored, yellow-fleshed peaches adapted to the Southeastern States and ripening at seasons when yellow-fleshed varieties were not heretofore available; two strawberry varieties adapted to the Middle Atlantic States; a new canker-resistant blueberry for North Carolina; and a new grape, valuable because of the highly colored juice it produces.

2. Chemical thinning of peaches promising. Rising labor costs have made imperative the development of a less costly method of thinning peaches. Chemical thinning with 3-Chloro-isopropyl-N-phenylcarbamate (3-Cl-IPC), applied as a spray, offers a possible solution to this problem. In 1953, 3-Cl-IPC was sent to 5 investigators in different States for trial, and suggested experimental procedures were sent to 15 State workers in peach-producing areas. Their reports were predominantly favorable. Recommendations have been made to State investigators interested in extending experiments on a semi-commercial scale.

3. Antibiotics effective in control of fire blight of pear. Following preliminary experiments in 1953 that indicated the value of streptomycin in controlling fire blight, a very extensive experiment was conducted in California in 1954 involving various concentrations and numbers of applications. This experiment has shown that an antibiotic mixture, streptomycin plus terramycin, is highly effective in controlling this bacterial disease. Control was highly effective with 5 applications at 100 parts per million. Effectiveness decreased as number of applications decreased or as concentrations of material decreased. The fruit was free of russet, a type of blemish that usually follows the use of copper sprays or dusts, which was the best previous treatment for blight control.

4. Citrus protected by mild strains of tristeza virus. Records of experiments in Brazil on tristeza virus of citrus are proving of great value to the citrus industry of this country. In Brazil, orange and grapefruit trees containing mild strains of the virus have grown and fruited satisfactorily on non-tolerant stocks even when the severe "killer" strain is present. Thus, the very mild strains appear not to cause severe injury and in turn protect the trees against the severe strains of the virus. This information, combined with the knowledge that the present known insect vectors in Florida are relatively inefficient agents of virus transmission, forms a basis for understanding why the plantings in the Indian River section of Florida, and the Rio Grande Valley in Texas have been able to survive, even though a mild strain of tristeza virus is now believed to have been in these areas for 20 years or more.

5. Blackberry briars and tung seedlings controlled with 2,4,5-T. Blackberry briars and tung seedlings are the two most troublesome weeds in tung orchards that cannot be successfully controlled by cultivation. Briars are the more serious because laborers will not gather tung nuts among briars, resulting in loss of crop and leading to greatly increased numbers of tung seedlings. Hoeing briars out is ineffective because they sprout from the roots in increased numbers. Research with various herbicides and times and rates of application shows that use of the ester formulation of 2,4,5-T at 3 pounds per 100 gallons of water about May 25 gave 100 percent control of the briars and tung seedlings without injury to the tung trees. Growers are enthusiastically adopting this practice.

6. Several new vegetable varieties released. Columbia, the first curly-top resistant snap bean of high commercial quality and productivity was released in the spring of 1954 by the Department and the Oregon Agricultural Experiment Station. It gives home gardeners and commercial bean growers in areas subject to curly-top their first opportunity to grow a truly high-quality garden bean resistant to that disease.

A new large, long, "gray" (light green), watermelon named "Charleston Gray," has been developed at the Vegetable Breeding Laboratory at Charleston, South Carolina. Its unusual productivity, disease resistance, attractiveness, and market qualities have created great interest on the part of growers.

Foundation seed for the production of 12 new onion hybrids for growing in the North was released to seedsmen.

Saco, a late-maturing potato variety was recently introduced in cooperation with the Maine Agricultural Experiment Station. It combines high yield, high dry-matter content, immunity from the common races of the late blight fungus, immunity from mild and latent mosaics, and high resistance to net necrosis.

7. New varieties of garden lilies extend blooming season. Nine new varieties of garden lilies developed by inter-specific hybridization have been named and distributed to lily growers. These hybrids have a blooming season starting in late May and continuing into September.

8. Flowering of Georgia easter lily bulbs improved by storage in film-lined boxes. Eastern lily bulbs grown in Georgia were packed in peat containing 22, 44 and 63 percent moisture and stored at 31°F. in bulb cases lined with polyethylene plastic film or rubber-base pliofilm. The films prevented loss of moisture from the peat. Earliness of blooming was positively correlated with the moisture content of the peat. Bulbs stored in peat alone became desiccated, required longer for forcing, and had a shorter storage life than those in film-lined cases.

9. Plant introductions aid breeding programs. During the year, 9,224 plant introductions, comprising 1,346 horticultural items, 6,500 field crops, and 330 specialty crops, were brought into the United States. During the same period, plant breeders reported on a number of previous introductions whose worth is only now becoming apparent. Some 53 promising introductions among horticultural crops, 91 among field crops, and 13 in the specialty-crop group are now being used in breeding programs.

10. Nematodes a factor in slow-decline disease of citrus. Recent experiments and observations have indicated that various kinds of plant parasitic nematodes may be a very important factor in slow decline of citrus. These include the citrus root nematodes, burrowing nematodes, and sting nematodes. Preliminary experiments have shown that both sting and stubby root nematodes can cause decline and also that

nematocidal soil fumigants can prevent slow decline in young transplants. Research now in progress is designed to determine the pathogenic effect of the various species, alone and in combination, as well as the relationships of nematodes to other organisms found in declining trees.

11. Improved method found for application of soil fumigants. At present, the most popular of the soil fumigants used for the control of nematodes and other soil pests, are applied in liquid form. The applicators used are subject to a variety of troubles, including leakage, corrosion, and stoppages due to the accidental presence of soil and other particles in the fumigant. It has been found that adsorption of the fumigants on certain silicon compounds, on vermiculite, or on Panacalite, does not interfere with their efficacy. Adsorbed fumigants in granular form can be applied with several types of fertilizer distributors, which eliminates not only most of the troubles with the present method, but also eliminates the need for a special machine for application of liquid fumigants.

12. Expensive control measures on downy mildew eliminated. Timely disease reporting and reliable forecasts through the Plant Disease Warning Service contribute to more efficient planning for disease control. Costly and unnecessary control measures against downy mildews, which were relatively light in 1953, were prevented since research in North Carolina, Delaware, and Iowa had improved the bases for forecasting incidence of these diseases. A patent is pending for a dew-recording instrument designed and constructed to measure the onset and duration of dew deposition, one of the environmental factors that affect occurrence of downy mildews.

13. Plantings reconditioned at National Arboretum. The forty thousand visitors to the National Arboretum in fiscal year 1954 exceeded the total of any previous year. Special ceremonies marked the dedication of the Morrison Azalea Garden and the formal presentation of azaleas from the people of The Netherlands.

Among the living plant collections at the Arboretum, principal attention has centered on a reconditioning of the plantings on Mt. Hamilton to permit better public access and to improve their educational value by the assemblage of clonal reference collections identified with plastic display labels. More than 3,000 specimens have been transplanted in this area.

A collection of camellias, rhododendrons and additional crabapples, hollies, etc. has been planted in other areas. Young plant accessions have included 340 azalea clones, 290 hybrid and species rhododendrons, 80 camellias, 250 clones of black locust, 30 crabapple selections, and numerous miscellaneous items acquired by gift and purchase.

In addition to the use of display labels, the plant collections have been rendered more effective from an educational standpoint by the aid of printed information which included a descriptive

folder of the Arboretum with map, an annotated list of the plants growing naturally at the Arboretum, and a leaflet on azaleas and rhododendrons. This is the first of a projected series on the Arboretum collections.

The hurricane of October 15, 1954 caused severe damage. A total of 160 trees were felled including many specimens over 100 feet high. In the azalea section, 52 shade trees needed for shade were felled within a 10 acre area. A temporary vehicle storage building was totally destroyed. The brick overlook at the head of the azalea valley was damaged by a large felled tree.

Entomology Research:

1. Bait sprays aid in control of fruit flies in Hawaii. A significant feature of the studies carried on in Hawaii with insecticides for the control of fruit flies has been the further development of bait sprays containing protein hydrolysates. Field tests with parathion bait sprays show that only one-half as much parathion is needed for effective fruit fly control when 1 pound of protein hydrolysate per acre is included in the spray. There is also an increase in effectiveness, an over-all saving in spray cost, and a substantial reduction in residue and application hazards.

2. Dieldrin dusts control sweetpotato weevil on seed beds. Experiments in Louisiana during 1953 in cooperation with the Louisiana Department of Agriculture and Immigration, demonstrated that treatment of sweetpotato seed beds with a 2-1/2 percent dieldrin dust gave effective control of the sweetpotato weevil. Four applications were made at the rate of 100 pounds of dust per acre per application. In experimental seed beds receiving this treatment, only 1.2 percent of the plants and 0.6 percent of the potatoes were infested by the sweetpotato weevil, as compared to approximately 42 percent of the plants and 39 percent of the potatoes infested in comparable untreated seed beds. This treatment has been recommended for use in the known sweetpotato weevil-infested districts of Louisiana as a means of suppressing this pest in the plants or vine-cuttings transplanted to the field.

3. Effective methods developed for controlling hornworms and budworms on tobacco. Of the effective insecticides generally available to tobacco growers, TDE presents the least hazard, not only to persons making the applications, but also to crop handlers and to smokers. Its use was stressed in 1953 in order to reduce the use of lead arsenate and paris green, which leave undesirable arsenical residues on the cured tobacco, and to prevent the use of toxaphene and lindane, which may seriously impair the flavor and aroma of the manufactured product. However, TDE is slower in killing hornworms than is desirable. Endrin is more effective, kills insects more rapidly, and reports from two manufacturers indicate that the flavor and aroma of cigarettes will not be impaired by applying it to growing plants at the rate of 0.4 pound or less per acre per application. Field experiments have shown that this dosage gives

satisfactory control of the tobacco hornworm. Endrin and TDE will be recommended for the control of hornworms and budworms on tobacco during 1954.

4. Insecticides successful in controlling mites on small grains. Various chemical formulations were tested against the brown wheat mite and the winter grain mite in cooperation with the Kansas and Texas Agricultural Experiment Stations. The winter grain mite was effectively controlled in Texas by the application of one of the organic phosphorous compounds--parathion, TEPP, Metacide, or malathion--at a dosage of 0.25 pound per acre. Three organic sulphur compounds--Ovotran, Sulphenone, and Aramite--at a dosage of 0.33 pound per acre also gave satisfactory control. The sulphur compounds are of interest because of their relative non-toxicity to warm-blooded animals. Also, they can be applied to infested small grain fields with little hazard to the applicator or danger to farm animals subsequently grazing in the treated fields.

5. Wheats tested for resistance to hessian fly attack. Of 28 soft red winter wheats entered in the 1953-54 uniform nurseries in competitive tests with other improved and standard varieties, 8 were highly resistant to the hessian fly and 3 are being increased by breeders as prospective releases in Indiana. Two hard red winter wheats resistant to disease and hessian fly are being increased by the breeders in Kansas as prospective releases and 3 other outstanding strains are included in the Kansas intra-State yield tests. In addition, approximately 400 fly-resistant wheats are in yield tests in Georgia, Indiana, Kansas, Missouri, and Nebraska, and 29 selections of the more progressive and outstanding fly-resistant, disease-resistant strains were tested for fly resistance in uniform nurseries in 14 States. Twenty strains had low or no hessian fly infestations in Pennsylvania, West Virginia, and Missouri under moderate to heavy fall attacks of this insect. All of the resistance work was conducted in cooperation with plant breeders of the Agricultural Research Service and State Agricultural Experiment Stations.

6. Several systemic insecticides show promise against cotton insects. American Cyanamid compounds 12008, 12009, and 12013 were each found to have systemic insecticidal properties against the cotton leafworm, cotton aphid, and desert spider mite when applied as seed treatments. Compounds 12008 and 12009 were also systemically effective as seed treatments against the leaf perforator. In a field cage test, compound 12013 gave systemic protection against boll weevils for one week, 12009 for two weeks, 12008 for four weeks, and Bayer L-11-6 for five weeks. These materials are highly effective as contact sprays against cotton aphids and spider mites, but only moderately effective against the boll weevil and the cotton leafworm. They are all non-toxic to the cotton plant when applied as sprays or as seed treatments. Shell compounds 1836 and 2046 were equal to Bayer L-11-6 in seed treatment tests against cotton leaf perforators and cotton aphids.

7. Poisoned baits effective against insecticide-resistant house flies. An important contribution has been made in developing poison baits for control of house flies. Three new compounds - malathion, diazinon, and Bayer L 13/59 - are highly effective and are all less toxic to warm-blooded animals than the currently used TEPP. These materials at 0.1 percent concentration plus 10 percent sugar or molasses in 3 gallons of water applied daily on the floors of barns have controlled flies which were not controlled by currently available residual sprays. Dry granulated sugar containing 1 percent of these compounds is also effective when sprinkled lightly over the floors and leaves no sticky residue. From 1 to 4 grams of active insecticide used daily per barn has given approximately 90 percent control of highly resistant flies.

8. Phosphorus compounds promising as systemic insecticides against cattle grubs. Diazinon, Chlorthion, and Bayer L 13/59 were found effective in killing grubs when orally administered to cattle at rates of 10 to 100 mg./kg. These findings are most promising and give encouragement that highly effective and safe chemicals may be found and developed. Much work remains to be done before recommendations for practical use can be made.

 Another important development in cattle-grub control was the finding that diazinon, Bayer L 13/59, and Bayer 21/199 killed grubs when sprayed on the backs of cattle at 0.5 to 1.0 percent. Malathion was completely ineffective and dieldrin nearly so. Except for rotenone, no other insecticides have proved effective as a spray for grub control.

9. Taxonomic research guides control procedures. Critical studies have established beyond question that the beet leafhopper, and its relatives are native to the Old World. The search for parasites to control this important pest is thus established on a firm basis. Previously, searches for parasites were made in countries where superficially similar but unrelated species occurred, and these explorations were unsuccessful.

10. Progress in Klamath weed control. A survey initiated in 1952 and completed in 1953 showed that nearly 400,000 acres of range in California, once lightly to heavily infested with the Klamath weed, have been brought under biological control by the leaf beetle, Chrysolina gemellata, originally introduced into California from Australia. Plot counts have shown a recovery of this weed of less than 1% after five years of control by C. gemellata. Releases of this beetle in infested States of the Northwest are continuing.

11. Insecticide residues on fruits, vegetables, and forage crops studied. Peach leaves and fruit from experimental plots sprayed with parathion and EPN for control of the oriental fruit moth were analyzed immediately after spraying, and at weekly intervals for 3 weeks. At the end of this period, 95-100 percent of the parathion deposited on leaves, about 95 percent of the parathion on fruit and about 35 percent of the EPN residues had disappeared. The final residues were

were less than 0.5 parts per million (p.p.m.) for parathion, for EPN the range was about 0.26 to 1.52 p.p.m. The pesticides are volatile over a period of time and will evaporate.

Malathion residues on pea vines, cherries, and cantaloupes were found to weather off rapidly and residues at harvest were generally less than 0.5 p.p.m. Lettuce harvested 7 days after treatment showed only a trace of malathion. Washing and blanching of broccoli in preparation for freezing reduced the malathion content to 5 p.p.m. compared with 26 p.p.m. in a frozen unwashed and unblanched sample. Similar treatment of broccoli that had been treated with parathion reduced the parathion content from 3 to 0.1 p.p.m.

The proposed tolerances established by the Food and Drug Administration as safe and permissible for most fruits and vegetables are 1 p.p.m. for parathion and 3 p.p.m. for EPN. No tolerance has as yet been established for malathion which is closely related to parathion and less toxic.

FARM AND LAND MANAGEMENT RESEARCH

Current activities: Soil and water conservation research is conducted to develop improved or better soil and crop management practices; to improve irrigation and drainage methods and reduce soil salinity problems; to develop information on watershed hydrology, the sedimentation of streams and reservoirs, the design and hydraulics of structures, and the engineering phases of irrigation and drainage; to improve fertilizers and liming materials; and to determine the relation of soils to plant, animal and human nutrition. Agricultural engineering research is aimed at the mechanization of crop production, the development of better types of farm buildings and equipment for livestock and for on-farm handling, storing, and conditioning farm commodities, and the development of new farm uses for electric energy and the adaptation of electical equipment to farm use. Economics of production research is conducted on profitable adjustments in farming by type and size of farm; relation of these adjustments to costs and returns and to total farm output of different products; efficiency in use of labor, equipment, land, and water; profitableness of new and improved farming techniques; inventory and analysis of land resources; and problems of farm valuation, taxation, debt, tenure, risk and insurance.

Selected Examples of Recent Progress:

Soil and Water Conservation Research:

1. Crop yields increased by reducing "traffic pans." New Jersey investigations show that compacted layers or "traffic pans" in soils inhibit potato and sweet corn yields. Compacted layers form at depths ranging from 8 to 16 inches with maximum density at about 10 inches. Greatest compaction occurs between rows where wheels of farm machinery pass, and less under the crop row, indicating some loosening over-winter from frost action. Studies indicate that machinery traffic, now averaging 20 to 25 miles for each acre, can be

materially reduced with a consequent improvement of soil structure and potato yields. With chemical weed control and two cultivations, yields were higher than with six cultivations. Introduction of clover into a potato rotation eliminated the compacted layer and stabilized soil structure. A combination of reduced traffic and introduction of deep rooting legumes in the rotation should overcome compaction difficulties.

2. Lister planting corn saves soil in Iowa. Lister planting of corn between terrace intervals has given very effective erosion control on the steep, highly erosive loess soils of Western Iowa. This practice has reduced soil loss 65 percent and cut runoff 42 percent, permitting use of wider spaced terraces and rotations with a higher percentage of corn.

3. Heavy fertilization of corn increases water use efficiency. Heavy fertilization of corn on claypan soil in Missouri materially reduced the amount of water required to produce a bushel of corn. Heavily fertilized corn during the dry season of 1953 yielded 78.7 bushels and unfertilized corn yielded 18 bushels per acre. Data showed that the fertilized corn required only 5600 gallons for each bushel of corn, whereas the unfertilized corn used 21,000 gallons per bushel. This indicates that high levels of fertility will greatly increase the efficiency of moderate amounts of soil moisture.

4. Mulch tillage saves soil in Texas blacklands. Marked progress was made at Temple, Texas, in 1953 in adapting trash mulch tillage methods to the Blacklands. Sweep tillage was used satisfactorily for the control of Johnson grass and for practical handling of all crop residues on both terraced and unterraced lands. In runoff-erosion studies, corn following grass-legume sod lost distinctly less soil than cotton and corn following corn and cotton. This is the first time that a distinct carryover protection from the previous crop in the rotation has been shown under conditions at Temple. Grass clumps and roots binding the soil together appeared to give the protection that resulted in 4.6 tons of soil loss per acre compared to 10.2 tons for the continuous row crops. Total runoff for the year was 1 inch less for corn grown after 2 years of grass-legume sod.

5. Management practices affect runoff and soil losses in the Northwest. Precipitation at Pullman, Wash., in the Palouse Region in 1953 was approximately 4-1/2 inches above a 22-year average. A rather unusual feature of the 1953 precipitation was the occurrence of 9.23 inches of rainfall during a 30-day period beginning about January 9. During this period, the runoff varied from 1 to 5 inches on plots on which several variables are being studied. Wheat land, after alfalfa and grass, yielded 0.9 inch of runoff and soil loss of 1.6 tons per acre. Wheat after fallow yielded approximately 3.1 inches of runoff and 10.4 tons per acre of soil loss. Again in a study of tillage operations on sweet clover green manure, subsurface tilled plots yielded about 2.6 inches of runoff and 5 tons per acre of soil loss.

Where moldboard plowing was used in the system, the runoff was 5.6 inches and the soil loss was 29.7 tons per acre. Major soil structure differences occur also under the various cropping and management systems. These results show that farmers can greatly reduce soil and water losses by using good rotations and subsurface tillages.

6. New test developed to determine available phosphorus in soils. A new method for determining the available phosphorus of soils has been developed and tested in greenhouse and field experiments. This method is adaptable to the rapid routine procedures required in the modern soil testing laboratory. It embraces extracting soil samples with a 0.5 molar solution of $NaHCO_3$ at pH 8.5 and determining the phosphorus in this extract. The method was primarily designed for use on the neutral and alkaline soils common to the Western States where the previous methods available were not wholly satisfactory. However, the evaluation studies have shown it to be satisfactory for use on a considerably wider range of soils. The method is currently under extensive testing by a number of laboratories in the United States and foreign countries. Several laboratories have already adopted the method.

7. Blackgum found to be food indicator plant for cobalt. Work completed during the past year showed that blackgum leaves, Nyssa sylvatica, will serve as an indicator of the cobalt status of a soil. Less than 5 parts per million of cobalt in the dry leaves is an indication of a cobalt deficient area that will not support cattle subsisting on broomsedge and other native forages, 5 to 9 parts per million is indicative of borderline areas, while 10 parts per million or above is indicative of regions where cobalt deficiency in cattle may not be expected to occur. The high cobalt content of the blackgum leaf, its apparent sensitiveness to the cobalt supplying power of soils, and its freedom from direct soil contamination make it possible to interpret a soil type in terms of cobalt-supplying power as accurately with two samples of blackgum leaves taken on one date as with a total of 15 samples of broomsedge taken on three dates during a growing season.

8. Satisfactory drop spillway outlet designed. Important progress was made in the design of the straight drop spillway, which is a key structure for channel stabilization in soil conservation work. A suitable formula was developed for determination of tailwater depth which, along with standardization of the approach channel, assures satisfactory performance. A chart for the determination of the form of the nappe for both free-and submerged-flow conditions was prepared for the use of the designer.

9. Effect of good conservation practices on watersheds for saving water measured. The effects of good conservation practices as compared with ordinary farm practices are being tested on experimental watersheds. During the critical storm period May 11-16, 1953 at Waco, Tex., for example, conservation practices as used on the watershed were very effective in reducing flood runoff rates and total volumes. During

the storm of May 12 the total infiltration for an area of 176 acres with ordinary farm practices was 1.46 inches from 2.66 inches rainfall, while for a 132 acre area with good conservation practices the infiltration was 2.19 inches from 2.95 inches rainfall. In other words, 45 percent of the rain ran off the field with ordinary farm practices while only 25 percent ran off the area with good conservation practices. The same type of difference was measured for other areas and the differences continued throughout the entire storm period May 11-16.

10. Granulation of mixed fertilizers. For a number of years the Department has conducted research investigations of the granulation of mixed fertilizers as a means for improving their handling and storage qualities and facilitating their application to the soil. The conversion of mixed fertilizers into granular form and their packaging in moisture-proof bags permits the use of high proportions of low-cost concentrated materials in the manufacture of the mixtures, and makes possible important increases in the plant food content of the mixtures. Because of the consequent reduction in the costs of handling, bagging, and transporting the higher analysis mixtures, the farmer can thus be supplied with fertilizers of superior quality at substantial reductions in their cost per unit of plant food. Granulation of mixed fertilizers is now being rapidly adopted by the industry. Present production of granular mixtures is estimated to be at the rate of at least $2 million annually, or approximately 15 percent of the total domestic production of mixed fertilizers. It is expected that by 1957 more than 50 percent of the production of mixed fertilizers will be in granular form.

11. Fertilizer use sets 14th successive annual record. In the year ended June 30, 1953, preliminary data show that the consumption of commercial fertilizer in the United States and Territories amounted to 23,143,000 tons containing 5,562,000 tons of primary plant nutrients (1,616,000 of nitrogen, N; 2,233,000 of phosphoric oxide, P_2O_5; and 1,713,000 of potash, K_2O). This is the 14th successive year that a new record has been made. Compared with 1951-52, there was an increase of 3.2% in the quantity of fertilizer and 6.9% in total primary nutrients (N, 13.7%; P_2O_5, 1.5%; and K_2O, 8.3%). The consumption of mixed fertilizer in 1952-53 totaled 15,508,000 tons, an increase over the preceding year of 2.8% in the quantity of fertilizer and 6.7% in total primary nutrients. The average for the primary plant nutrient content of mixed fertilizers was 25.8% in 1952-53 as compared with 24.8% in 1951-52 and 24.19% in 1950-51.

Agricultural Engineering Research

1. Potato harvesting and handling equipment improved. Improvements were made in windrowing attachments for a 2-row potato digger, that permit savings of around 20 percent in the cost of hand picking as compared with a digger without the windrowing equipment. The use of the windrower equipped digger is a step toward the later adoption of full mechanical harvesting with a pickup-type harvester.

Within a period of two years after the development at the USDA Potato Research Center in the Red River Valley in 1951 of a potato harvester incorporating a laterally tilted cross conveyor to increase the effectiveness of mechanical separation of potatoes from clods and stones, this improvement has been incorporated in five commercially produced potato harvesters that have attained acceptance by growers in the Red River Valley. Three of the makes incorporating this feature are now being distributed on a nation-wide basis.

2. New grassland seed and fertilizer drill developed. Experiments with pasture establishment studies in 1953 gave some striking differences in pasture yields during their first cutting. An 8-month stand of 24 replicated treatments was harvested in May at Beltsville, Md., of a grass-legume mixture planted in September 1952. Plots with fertilizer in continuous bands one inch below ladino-fescue drilled 8 inches apart yielded 3,331 pounds per acre in comparison with 1,439 pounds per acre for plots with seed and fertilizer broadcast and firmed with a corrugated roller as in common improved farm practice. Two implement companies are now building experimental grass-land drills that are similar to the special drill developed in this project.

3. New type peanut harvester effective. Peanut combines using two types of separating mechanisms were developed cooperatively with the Georgia Coastal Plain Experiment Station and the University of Georgia. One separating unit consists of a chain raddle arrangement operating over a perforated screen; the other uses a series of cylinders, and is simple both in construction and operation. Both types were used with the spike-tooth picking arrangement developed earlier and provide positive movement of the peanut hay through the machine. Extensive tests show both arrangements to be effective and efficient. One manufacturer had an experimental harvester incorporating the cylinder separation principle in the field during the fall of 1953 and expects to produce some of these machines for release in 1954.

4. Air volume requirements for drying grains with unheated air in various climates studied. These requirements are being more closely defined by studies in Virginia, Georgia, and Iowa. Operating the fan under pressure rather than suction results in slightly faster drying, particularly when a duct system rather than a false floor is used for distributing the air to the grain. When duct systems are used that cause the air to travel in curved paths, the inequality of ventilation rates along the different paths results in streaks of slowly drying grain.

5. Green boll trap for cotton ginning equipment designed. This device, recently developed at the Stoneville, Mississippi Cotton Ginning Laboratory, is now being manufactured by several gin machinery companies for use in connection with ginning cotton harvested by mechanical strippers. It eliminates some of the wear on the cylinders by removing the rocks and green bolls before the cleaning operation.

It also is considered a fire prevention measure, recognized in some States by the issuance of reduced insurance rates to cotton gins properly equipped with this device. A further innovation has been the adaptation of this idea to field strippers, thus reducing the amount of rocks, trash, and green bolls hauled to the gins.

6. Stick remover developed for rough harvested cotton. A stick remover, which has proved effective in removing limbs and trash from cotton harvested by machine strippers, has been developed at the USDA Cotton Ginning Laboratory. The stick remover is a relatively simple machine and its efficient performance indicates that the number of machines and operations necessary for ginning rough harvested cotton may be reduced. The leading gin manufacturers are either incorporating reproductions of this machine, or adapting the salient features to augment their seed cotton cleaning equipment.

7. Water transportation of sour cherries proves to be effective. Research on water cooling of sour cherries in the orchard and transporting them in water to canning plants has attracted the attention of both producers and canners. Results of large scale tests show that comparing this method with handling entirely in lug boxes, the number of lug boxes for handling can be greatly reduced and the cherries can be unloaded more rapidly with less labor cost; water transported cherries also show less weight loss in transit, less scald, and require less culling than those transported entirely in lugs. As a result of this research work, a few cherry producers in Michigan and Wisconsin initiated this method during the 1954 harvest season and others are planning on adopting it for the 1955 season.

8. New type brooding system developed. A new brooding system was developed in cooperation with the Connecticut (Storrs) Station in response to requests from local poultry growers for an automatic central-heating system providing radiant heat suitable for all weather conditions. The method consists of a pressure-atomized oil burner that heats air through a heat exchanger to an initial temperature of 400°F. A motor-driven blower circulates the heated air through a closed duct system installed along the rear wall of the brooder house. The black metal surface of the duct radiates a large amount of heat into the house. The pattern of radiated heat is such as to establish a large comfort zone (brooding area) the full length of the brooder house and allows more ventilation for the same heat input with moderate air temperature. The unit is already in commercial production.

9. Portable electric fence post designed. A portable electric fence post for use in rotation grazing was developed. The post is of farm-shop construction type from 3/8" steel rod and (plastic) polyethylene farm water pipe. The plastic pipe slips over a circular portion of the post and serves as the insulator for the charged wire. The fence wire slips into the insulated section without additional fasterners. The circular insulated portion is supported by a tripod formed from steel rod. The posts need not be driven into the ground, thus are easily movable daily or weekly as required. The fence wire slips into the insulated portion of the post requiring no additional fastener.

Production Economics Research

1. Continued high farm output in 1954. The volume of farm output in 1954 - 7 percent above 1947-49 and 29 percent above 1940 - was within one percent of the 1953 record. Advances in technology are chiefly responsible for the present high productivity in agriculture, as unfavorable weather held down output in many areas.

 Crop production per acre in 1954 was equal to the 1947-49 average and 14 percent above 1940 (Fig. 1). Cropland area used was only 3 percent more than in 1940. Livestock production per breeding unit in 1954 was equal to the 1953 record - 11 percent above 1947-49, and 21 percent greater than in 1940.

2. Net farm incomes were generally down in 1953, as the price-cost squeeze continued. Results are shown in the estimates of costs and returns made annually for 19 selected types of commercial family-operated farms in important farming areas throughout the country (Table 1). Net farm incomes in 1953 were lower than in 1952 on 16 of the 19 types of farm. Prices received for products sold were lower than in 1947-49 on 15 of the types; prices paid for goods and services averaged higher than in 1947-49 on all types of farms (Fig. 2). Net farm production was higher than in 1952 on 11, and above 1947-49 on 15 of the types of farms. The effects of the severe drought are shown in the net income loss in the nonirrigated areas of the Texas High Plains. Preliminary estimates for 1954 show some further decline in net incomes for most types of farms.

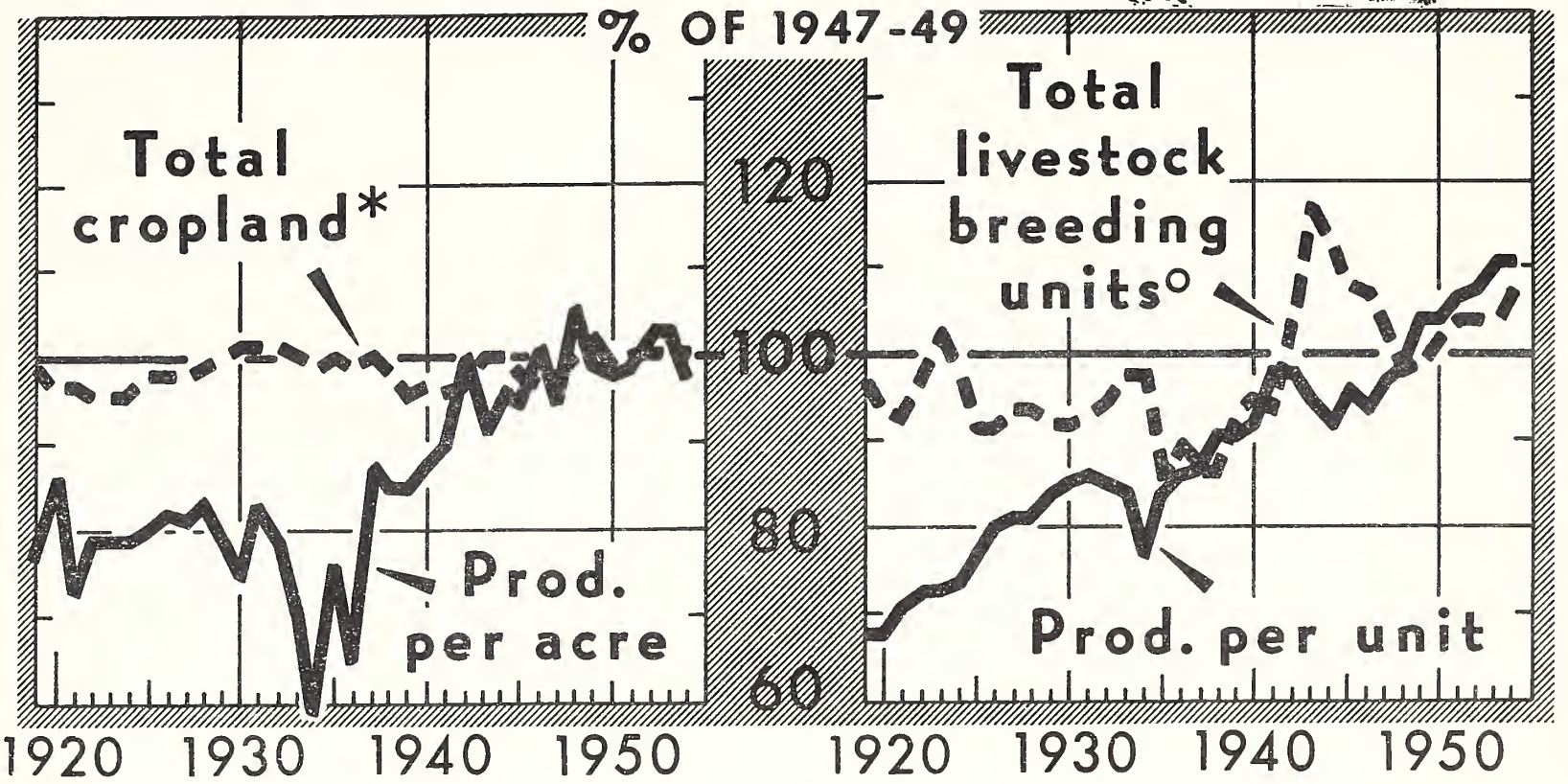
 The widespread net-income decline was due primarily to economic forces beyond the control of farmers. Farmers' economic efficiency--output compared with input--increased on 11 of the 16 types shown in Fig. 3 during the last 20 years. Particularly striking are the marked increases in economic efficiency for the wheat-small grain-livestock farms in the Northern Plains and for the cotton farms in the Mississippi Delta. Losses in efficiency were shown for cotton farms in the Southern Piedmont and Texas Black Prairie, and cattle and sheep ranches in the Northern Plains and Intermountain regions.

3. Farm real estate values remained essentially unchanged during the first half of 1954. At 120 (1947-49 = 100), the national index of average value per acre for July was the same as for March but 4 percent below a year earlier. Most of this decline occurred during the late summer and fall of 1953 when widespread drought and lower cattle prices reduced farm income in several areas. Generally stable prices for farm commodities and little change in the general economy have tended to maintain farm real estate values in recent months at about the mid-year level (Fig. 4).

 The volume of farm sales during the year ending March 1954 was 13 percent below the previous year and only half as large as during the peak years 1946-47. Farms bought were more frequently credit-financed than during any year since 1946. The course of average farm real estate values per acre and related factors since 1921 is shown in Fig. 5.

FARM PRODUCTION PER ACRE AND PER ANIMAL





*ESTIMATED ACREAGE FROM WHICH ONE OR MORE CROPS WERE HARVESTED PLUS ACREAGE OF CROP FAILURE AND SUMMER FALLOW

°INCLUDES ALL BREEDING LIVESTOCK EXCEPT HORSES, AND ALL LIVESTOCK PRODUCTION EXCEPT FARM-PRODUCED POWER OF HORSES AND MULES

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Figure 1

Table 1. - Net farm income, commercial family-operated farms, by type, 1953 with comparisons

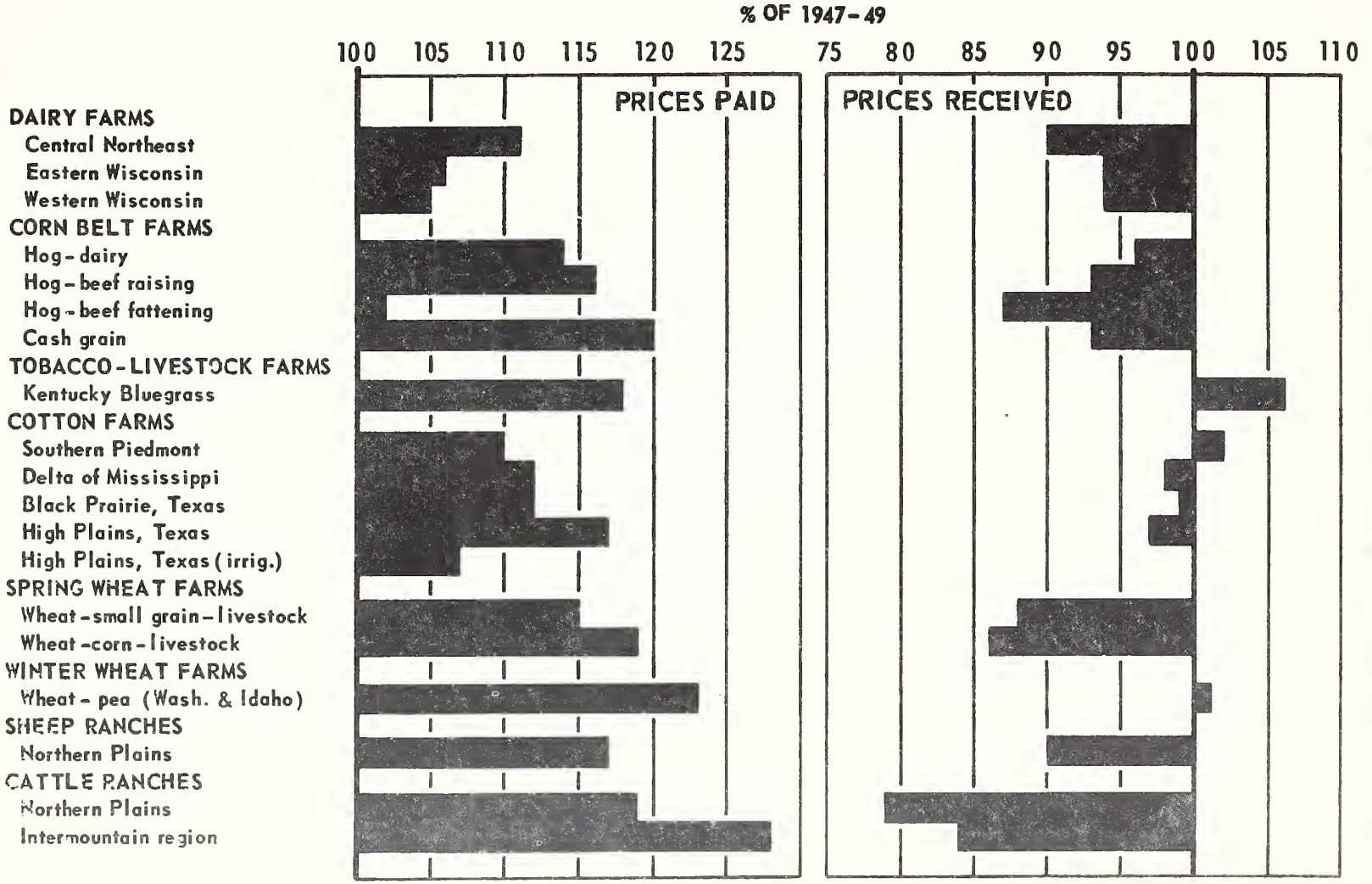
Type of farm and location	Net farm income					
	Average		1950	1951	1952	1953 1/
	1937-41	1947-49				
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Dairy farms:						
Central Northeast	960	3,892	3,539	4,475	3,956	3,316
Eastern Wisconsin	1,521	4,350	3,578	4,779	4,711	3,926
Western Wisconsin	1,242	3,290	2,844	3,891	3,925	3,166
Corn Belt farms:						
Hog-dairy	1,612	5,639	4,788	6,477	6,211	5,895
Hog-beef raising	928	3,370	3,881	4,374	4,457	3,280
Hog-beef fattening	2,520	10,665	9,601	10,871	8,787	6,982
Cash grain	2,627	8,930	7,062	10,233	9,248	7,656
Tobacco-livestock farms:						
Kentucky Bluegrass	1,192	3,334	3,106	3,883	3,976	3,457
Cotton farms:						
Souther Piedmont	494	1,564	1,203	1,973	1,596	1,263
Delta of Mississippi	1,024	2,839	3,221	2,565	3,076	2,949
Black Prairie, Texas	1,045	3,118	3,220	2,192	3,067	3,578
High Plains, Texas (nonirrigated)	1,675	6,411	5,832	7,009	2,434	-25
High Plains, Texas (irrigated)		10,761	10,880	14,513	13,768	10,736

Table 1. - Net farm income, commercial family-operated farms, by type, 1953 with comparisons--Continued

Type of farm and location	Net farm income					
	Average		1950	1951	1952	1953 1/
	1937-41	1947-49				
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Spring wheat farms (Northern Plains):						
Wheat-small grain-livestock	872	6,323	5,325	7,135	3,760	3,780
Wheat-corn-livestock	1,035	5,850	4,063	7,032	2,611	3,749
Winter wheat farms:						
Wheat-pea (Washington and Idaho)	2,764	11,864	9,851	10,716	14,210	13,538
Sheep ranches:						
Northern Plains	2,734	6,908	9,760	19,337	5,890	4,649
Cattle ranches:						
Northern Plains	980	6,466	5,031	9,791	5,942	3,464
Intermountain region	2,909	8,656	9,213	14,491	10,995	4,619

1/ Preliminary

PRICES RECEIVED AND PRICES PAID IN 1953, COMMERCIAL FAMILY OPERATED FARMS, BY TYPE

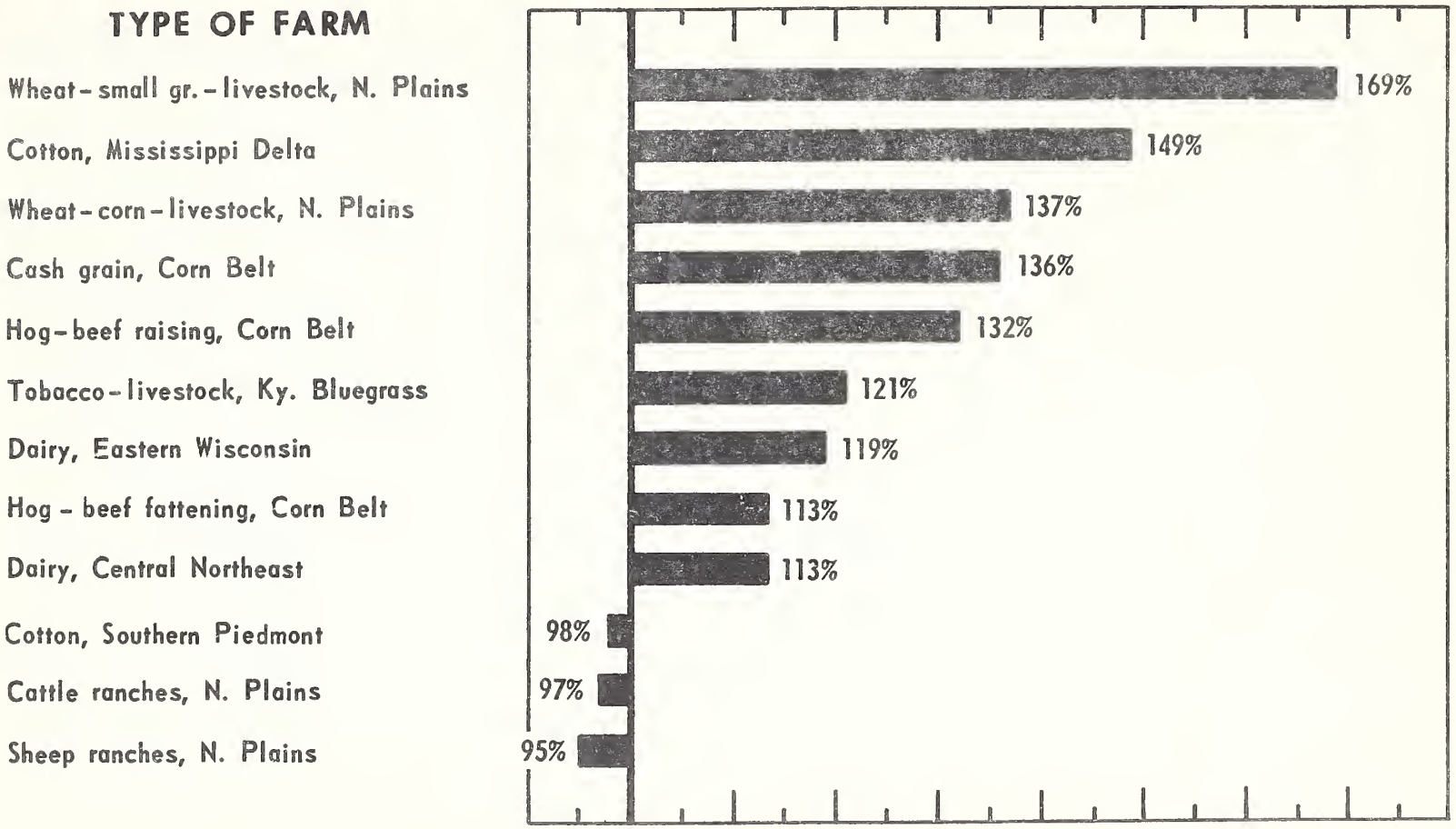


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Figure 2

1950-53 As a Percent of 1930-33

PRODUCTION PER UNIT OF INPUT*



* *PRODUCTION AND INPUTS MEASURED IN 1947-49 DOLLARS*

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Figure 3

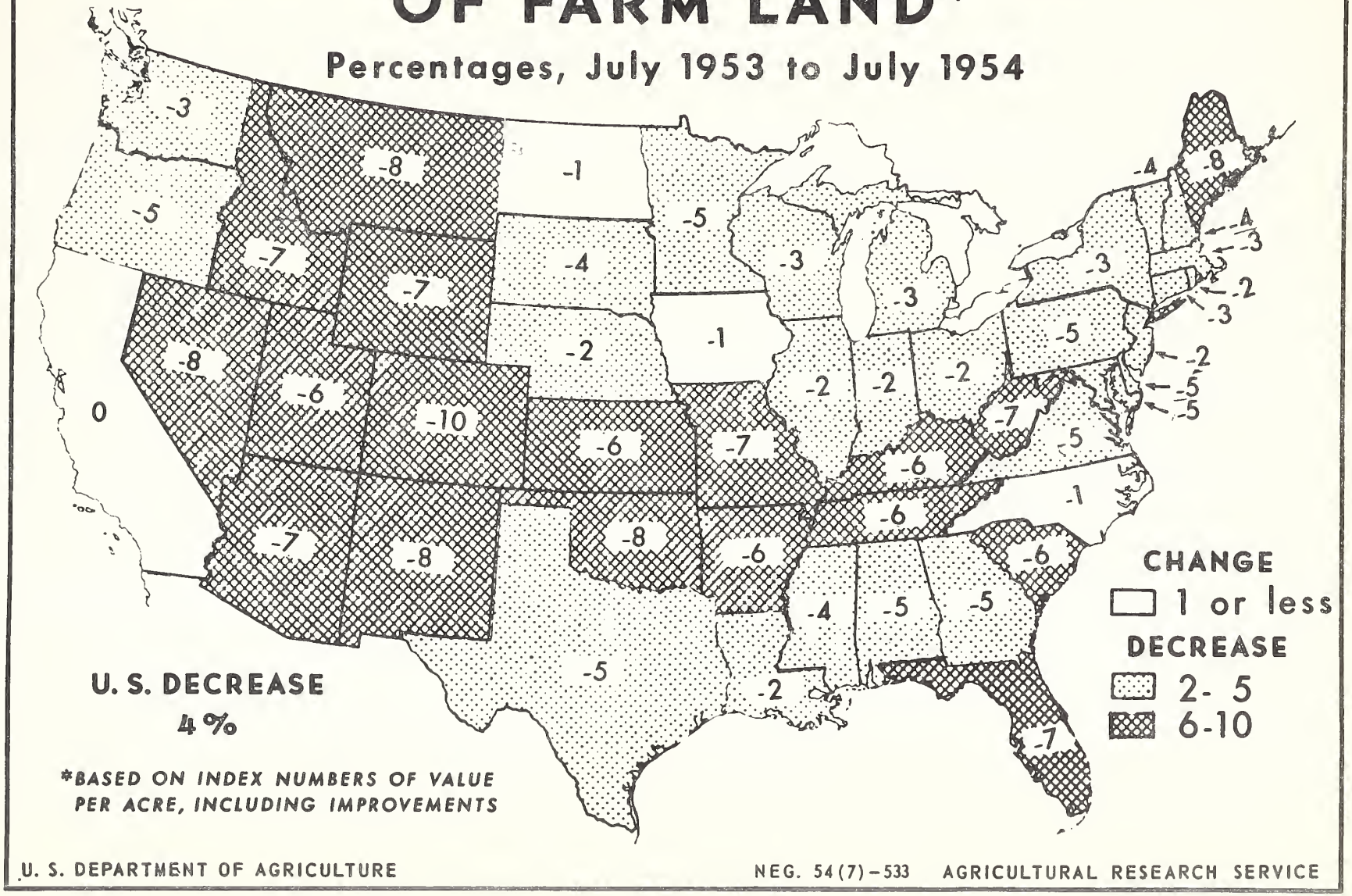
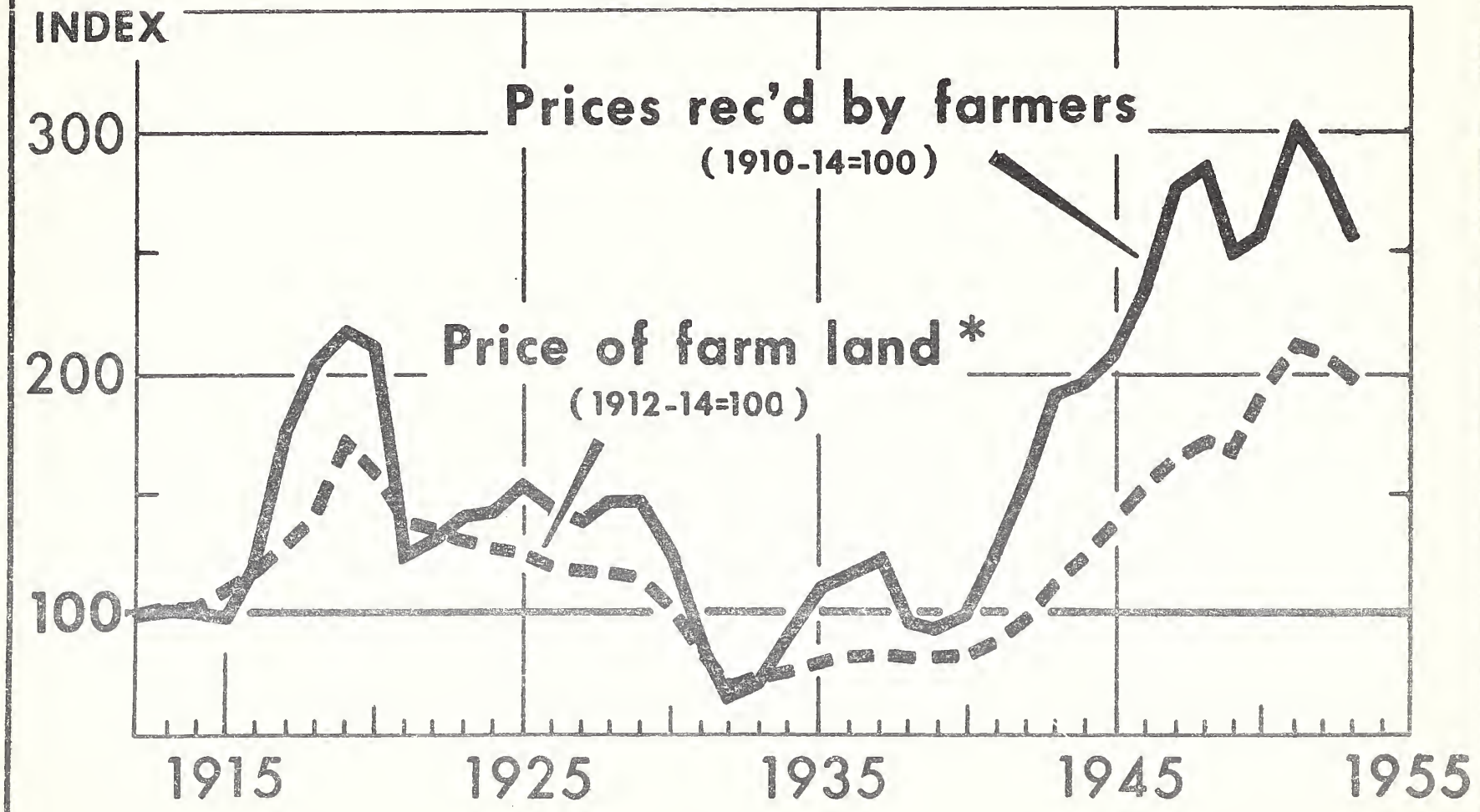

CHANGES IN DOLLAR VALUE OF FARM LAND*
Percentages, July 1953 to July 1954
-3
-5
-8
-7
-7
-8
-6
-10
0
-7
-8
-1
-4
-2
-6
-8
-5
-3
-1
-2
-7
-6
-6
-8
-6
-5
-4
-5
-2
-3
-3
-4
-8
-4
-3
-2
-3
-5
-2
-5
-5
-2
-2
-7
-5
-6
-6
-1
-6
-5
-5
-7
U. S. DECREASE
4%
*BASED ON INDEX NUMBERS OF VALUE PER ACRE, INCLUDING IMPROVEMENTS
CHANGE
1 or less
DECREASE
2- 5
6-10
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Figure 4

FARM COMMODITY PRICES AND LAND VALUES



*MARCH 1 OF FOLLOWING YEAR

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Figure 5

4. Farm mortgage debt higher; short-term debt lower. Total farm mortgage debt increased in 1953 for the eighth consecutive year and on January 1, 1954, totaled 7.6 billion dollars, 7 percent above the previous year. This is the highest figure since January 1, 1934, and is 61 percent above the postwar low in 1946. Farm-mortgage debt continued to rise during 1954 and at the end of the year is expected to total about $8.2 billion.

 On the other hand, nonreal-estate farm debt (excluding price-support loans) has turned downward after a sharp rise from the 1945 total of $2.7 billion (Fig. 6). The decline reflects a lessened use of credit for current production and some refunding of short-term into long-term debt secured by farm real estate. Most of the decline occurred in the principal livestock-producing regions.

5. Farm financial situation. The annual "Balance Sheet of Agriculture" shows that the total value of farm assets at the end of 1954 was about $157 billion, or about 8 percent below the peak of 1952. These assets include the physical properties--the farms, livestock, machinery, motor vehicles, and crop inventories; also the household goods, bank deposits, and other financial assets, owned by farmers. Total farm debts, including price-support loans of the Commodity Credit Corporation, changed very little in 1954, and at the end of the year will probably be about $17 billion. As a result, the equities of farmers and other owners of farm property dropped about 2.4 percent in 1954. Causes of the moderate decline include decreases in the value of farm real estate, livestock, and machinery on farms. However, despite lower incomes in 1954, farmers maintained their financial assets at approximately the same level as in 1952.

6. Farm taxes continue to rise. The annual survey of 1953 tax levies on farm real estate, payable largely in 1954, showed average taxes per acre about 5 percent higher than a year earlier. After 10 consecutive years of increase, the average per acre tax reached an all-time high. Compared with the base period (1909-13 = 100), the index stood at 391 (Fig. 7). In 1953, taxes levied on real estate and personal property totaled $866 million and $221 million respectively.

 Farm personal property taxes levied in 1953, payable largely in 1954, were 6 percent lower than a year earlier--the first decrease since 1933. The decline is due mainly to a decrease in livestock assessments. Personal property taxes comprise 20 percent of the total property taxes levied on farmers, and were about four and one-half times as large as in 1940.

 Preliminary analyses indicate that farm real estate tax levies in 1954 will contine to increase about 5 percent. Farm personal property taxes levied in 1954, on the other hand, are expected to show a further decrease of 3 percent.

7. Increased farm mechanization brings sharp rise in production per man. Farmers in 1953 had record numbers of farm machines (Table 2). The 1953 inventory volume of all farm power and machinery (including horses and mules) was 1.9 times that of 1935-39; 2.3 times that of 1910-14.

Table 2. - Number of specified machines on farms, United States, 1940 and 1953

Kind of Machine	1940	1953
	(in thousands)	(in thousands)
Tractors	1,545	4,400
Motortrucks	1/ 1,047	2,500
Automobiles	1/ 4,144	4,400
Grain combines	190	940
Corn pickers	110	635
Farms with milking machines	175	700

1/ April 1; all other figures are for January 1.

Farm mechanization has contributed significantly to increases in the volume of farm output and the rise in production per man-hour of farm labor. In 1820, one farm worker produced enough to support himself and only 3 others; by 1910, himself and 6 others; by 1940 himself and 10 others. Today the production of one farm worker is enough for himself and 17 others.

8. More farm production with less labor. Since 1940 total man-hours used in farming have declined a fourth. The greatest decrease occurred on crops, chiefly because of greater strides in mechanization. Although farm labor input has been cut 25 percent, total farm production has continued to increase substantially. Farm output per man-hour last year was more than three-fourths higher than in 1940. During the same period, crop production per man-hour rose 80 percent and livestock production per man-hour increased 40 percent.

9. Farmers adopting newer methods of harvesting hay. The hay harvest is being rapidly mechanized. In 1953, 66 percent of all hay was harvested with pickup balers as against only 2.5 percent in 1939. The field forage harvester has brought more hay chopping. Eight percent of the 1953 crop was chopped compared with 1.7 percent of the 1944 crop. In some of the Corn Belt and Lake States, where beef and dairy cattle and silage and hay crops are important, 12 to 20 percent of all hay is chopped.

10. Agricultural land use data developed. A study completed during the year (figure 8) which breaks down the 1,904 million acres comprising the total land area of the United States, supplies an account of the extent and distribution of the 473 million acres of cropland and rotation pasture, and of the 951 million acres of permanent pasture and grazing land used in agricultural production. There are also

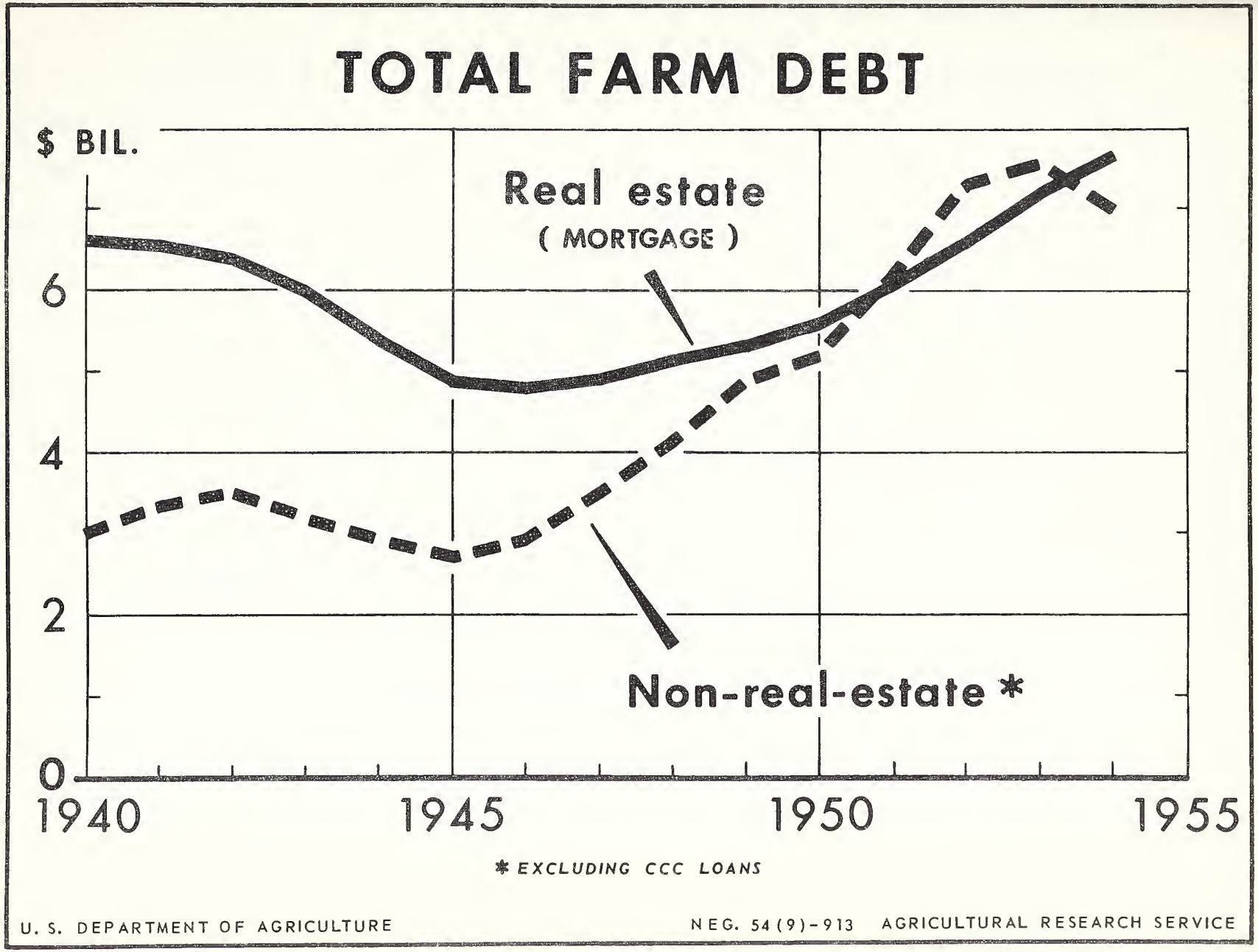

TOTAL FARM DEBT
$ BIL.
Real estate
(MORTGAGE)
Non-real-estate *
6
4
2
0
1940
1945
1950
1955
* EXCLUDING CCC LOANS
U. S. DEPARTMENT OF AGRICULTURE
NEG. 54(9)-913 AGRICULTURAL RESEARCH SERVICE

Figure 6

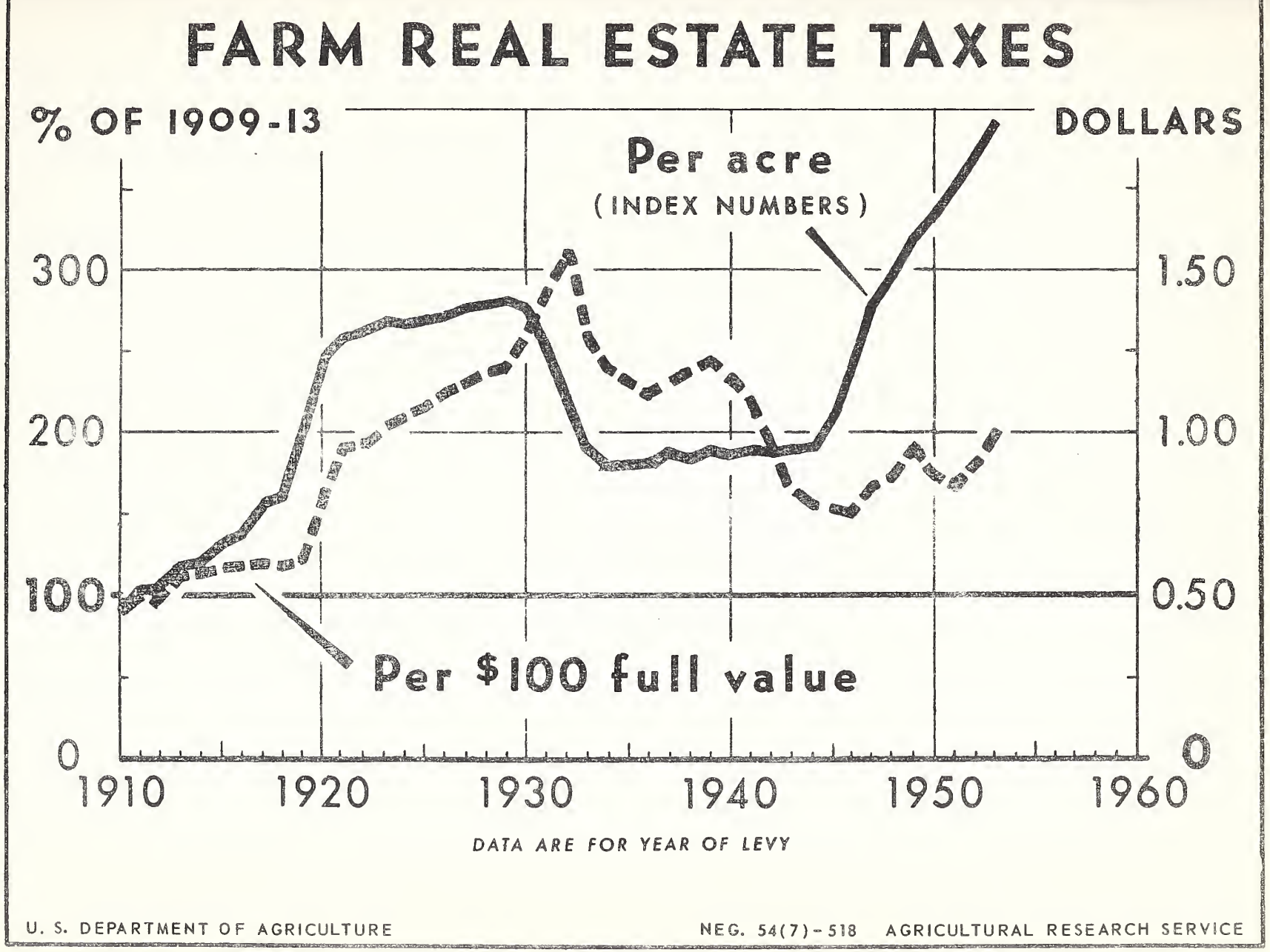

FARM REAL ESTATE TAXES
% OF 1909-13
DOLLARS
Per acre
(INDEX NUMBERS)
300
200
100
0
1.50
1.00
0.50
0
Per $100 full value
1910
1920
1930
1940
1950
1960
DATA ARE FOR YEAR OF LEVY
U. S. DEPARTMENT OF AGRICULTURE
NEG. 54(7)-518 AGRICULTURAL RESEARCH SERVICE

Figure 7

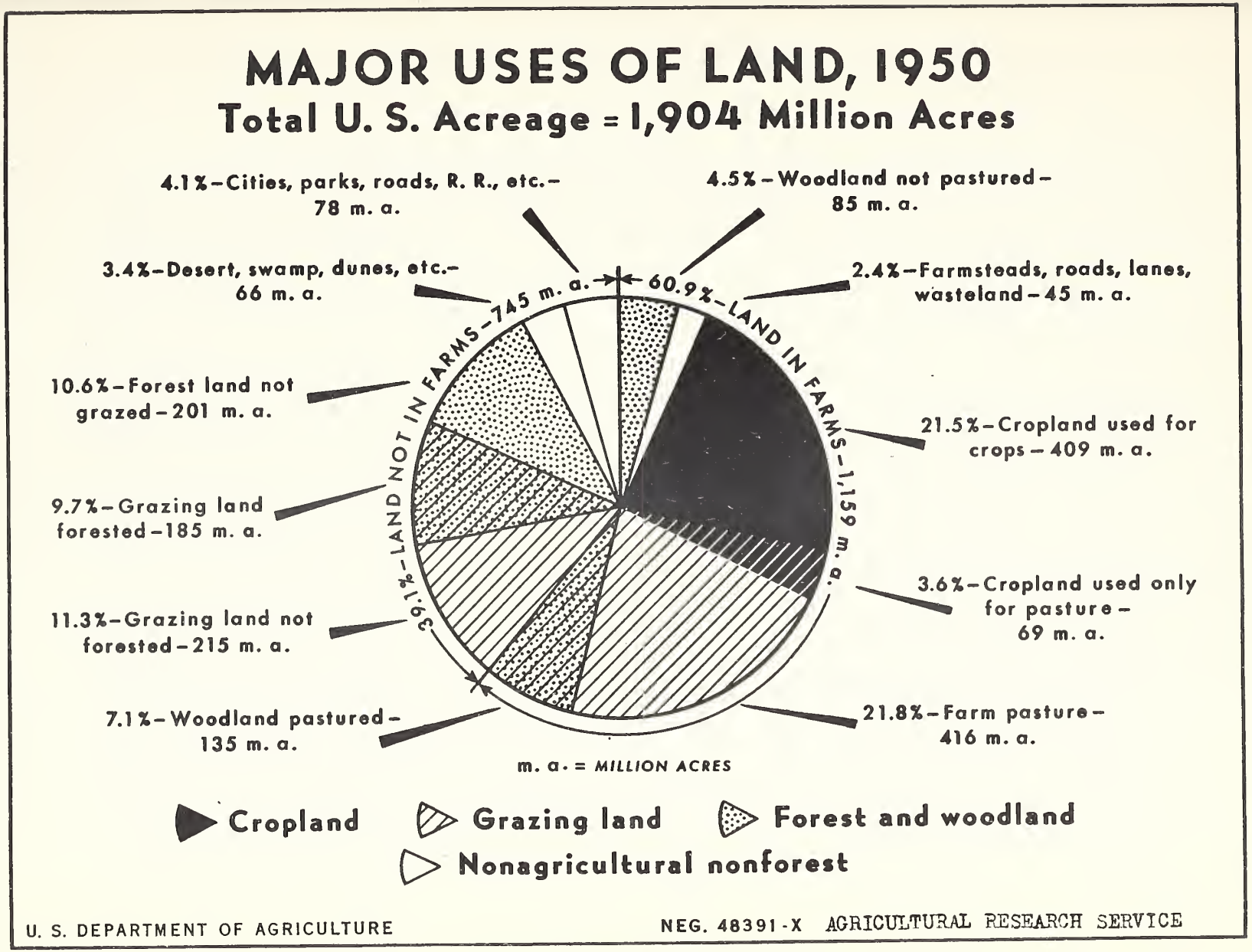

MAJOR USES OF LAND, 1950
Total U. S. Acreage = 1,904 Million Acres
4.1%–Cities, parks, roads, R. R., etc.–78 m. a.
4.5%–Woodland not pastured–85 m. a.
3.4%–Desert, swamp, dunes, etc.–66 m. a.
2.4%–Farmsteads, roads, lanes, wasteland–45 m. a.
10.6%–Forest land not grazed–201 m. a.
21.5%–Cropland used for crops–409 m. a.
9.7%–Grazing land forested–185 m. a.
3.6%–Cropland used only for pasture–69 m. a.
11.3%–Grazing land not forested–215 m. a.
21.8%–Farm pasture–416 m. a.
7.1%–Woodland pastured–135 m. a.
39.1%–LAND NOT IN FARMS–745 m. a.
60.9%–LAND IN FARMS–1,159 m. a.
m. a. = MILLION ACRES
Cropland
Grazing land
Forest and woodland
Nonagricultural nonforest
U. S. DEPARTMENT OF AGRICULTURE
NEG. 48391-X AGRICULTURAL RESEARCH SERVICE

Figure 8

85 million acres of farm woodland not pastured and 45 million acres of farm land occupied by farmsteads, roads, lanes and waste. The 478 million acres of cropland and rotation pasture are all in farms and consist of 409 million acres of cropland used for cultivated crops and 69 million acres of cropland used for rotation pasture. Of the 951 million acres of permanent pasture and grazing land, 551 million acres is pasture in farms and 400 million acres is grazing land not in farms. The farm pasture consists of 416 million acres of grassland and 135 million acres of woodland.

11. Improvements in farm leasing practices needed. A cooperative study with the North Central Experiment Stations shows that major adjustments are needed in customary leasing arrangements. Divisions of net returns between landlord and tenant varied widely from year to year and by type of lease. In general, landlords renting on shares in Iowa have been receiving an increasingly larger percentage of the farm net returns since 1933, while landlords renting for cash have received a diminishing percentage. A considerable portion of tenant moving, with consequent disruption of farming operations, community ties, and education, was found to be due to leasing arrangements insufficiently flexible to take account of changes in economic conditions.

12. Study discloses greater income possibilities from pasture-livestock farming in the Piedmont area. Results of a farm-management study in South Carolina indicate that by converting a medium-sized Piedmont cotton farm (about 75 acres of cropland) to grade A milk production, based largely on pasture, returns to labor and management could be increased considerably, even though improved practices are used on cotton. This advantage holds with the price of cotton as high as 35 cents per pound and the price of milk as low as $4 per hundredweight. It would take a few years to "grow into" the dairy business and the farmer would be operating a larger business. Investment would be about 40 percent higher.

13. Cash-grain farms in Iowa and Illinois. Analysis of combinations of land, livestock, and machinery which best fit available labor and farm size on cash-grain farms in Iowa and Illinois indicates that the optimum acreage of land for 1-, 2-, and 3-man farms is 240, 400, and 630 acres, respectively. The capacity of several of the principal machines is reached on the 3-man farm. Comparing the optimum with the present combinations of labor, land, and capital, most cash-grain farmers have too little land, not too much machinery. The most profitable system of farming on a 1-man cash-grain farm, for example, includes 25 percent grass and legumes, and feeder cattle to consume the forage. But intensive grain rotations and heavy applications of fertilizer are about as profitable as legumes and livestock.

14. Rice farming systems in Louisiana. Results of an analysis of alternative cropping programs on rice farms in Louisiana indicate that a farming system based on a rotation of 2 years of rice and 4 years of improved pastures, that do not require reseeding each year, and are grazed by beef cattle, is considerably more profitable than the customary rotation of one year rice and one year of unimproved pasture. Such lengthening of the rice-pasture rotation offers an opportunity for adjustment of rice acreage to market outlets.

15. Economic potentialities and problems of soil-conserving systems of farming. Cooperative regional research with the North Central Farm Management Research Committee showed that on most Corn Belt farms a successful soil conservation program involves a whole series of farm adjustments and that use of conservation practices eventually results in greater incomes but only after several years of shifting. Changing over to a system of farming with more grass and more livestock generally reduces income for a few years, requires more days of work, new investments of capital, a greater variety of skills in management, and may involve greater risk.

Study of progress and problems in attaining conservation on Michigan farms showed that 70 to 80 percent of the cooperators in each of five soil conservation districts found their farm plans to be workable. During a 5-to-7 year period preceding 1952, 10 to 30 percent of these farmers had adopted essentially all of the component parts of the farm plan. Many farmers who were progressing slowly expressed a need for information on costs and returns results from alternative systems of conservation farming so that the operator could select the system that best meets his situation.

16. Methods developed to reduce costs in dairy farming. The current price-cost squeeze puts a premium on efficiency in dairy farming. Results of recent economic studies point the way to numerous adjustments that dairy farmers can adopt to advantage.

In the Lake States, for example, cooperative studies with the Michigan Experiment Station show that feed costs in producing milk can be reduced as much as 20 to 25 percent by improving the quality of forage and feeding more forage and less protein and grain. In New England, a method of analysis was developed to assist individual farmers in deciding whether to raise or purchase their herd replacements.

A contract project involving a 3-year study of dairy farmers in Illinois showed that new dairy buildings and equipment for herds of 20-30 cows can now be provided at little more than half the average investment in the present conventional farm dairy set-up in the same locality. Not only was investment outlay greatly reduced, but dairy chore labor was brought down from as many as 225-man hours per cow per year to less than 60 in some instances. Also, quantity of bedding required per cow per year was as low as 420 pounds on some farms in some seasons.

17. Farm fire losses and insurance costs. United States farm fire losses have continued to mount--from $127 million in 1951, to $136 million in 1952, and to $139 million in 1953. However, measured in constant dollars (1939 = 100), farm fire losses have declined since 1944.

Based on the experience of sample farm mutual fire insurace companies, losses paid in 1953 averaged 13.8 cents per $100 of insurance, compared with 14.1 cents in 1952. Operating expenses, however, averaged 9.4 cents per $100 in 1953, compared with 8.6 cents in 1952. These companies increased insurance in force about 7.3 percent during 1953, while their safety funds increased about 4.6 percent.

18. Farm tax research to improve farm tax administration. The rising tax burdens on farm property have brought renewed interest in farm tax problems. A study of property tax assessment made in West Virginia shows a great difference in assessment of urban and rural real estate in nearly all counties. Although property is legally assessable at full market value, the average ratio of assessed value to sales value for all properties studied was 31 percent. The level of assessment in individual counties ranged from 17 to 69 percent of full value. Another study in South Carolina also shows great inequality in assessments of farm property in that State. In one county, for example, one property was assessed at 3.3 percent of its sale value, while another was assessed at 320.0 percent of its value. Relatively, the latter property bore a tax burden nearly 100 times the former. A broader study of property tax problems in the Southeast, made under the auspices of the Southeast Land Tenure Research Committee, developed recommendations for improvement of property taxation in 7 Southeastern States. Property is still widely used as the tax base for much of the locally raised revenue in these States, and for some of the State governments. Information from these studies has been the basis for steps being taken to improve property tax administration in the States.

LIVESTOCK RESEARCH

Current activities: Investigations are conducted on all farm livestock, poultry, and domestic fur animals to develop superior strains and types, establish nutritive requirements, determine physiology of reproduction, achieve efficient use of feed and forage in the production of meat, milk, eggs, wool, fur, and other products, develop practical methods of control of diseases and of parasites affecting livestock, and develop improved and efficient dairy management methods practices.

Selected Examples of Recent Progress:

Animal and Poultry Husbandry Research

1. Record-of-performance results aid beef cattle producers. During the past year the majority of the State Agricultural Experiment Stations cooperating in the national beef cattle breeding program have made notable contributions to record-of-performance research. Heritability estimates have been determined from birth weight, weaning weight, gain on test, 13-months weight, 18-months score, calving interval, and intensity of coat color. It was found that (1) birth weight was related to subsequent growth more highly than was weaning weight, (2) growth after weaning and rate and efficiency of gain were significantly correlated; and (3) birth weight, final weight on feed, and average daily gain on feed were positively correlated with most of the desirable carcass characteristics.

 Gain on the range was correlated with gain in the feedlot in studies at the New Mexico and Montana Stations. Results at the Virginia station indicate that progeny tests with either drylot or pasture feeding can be used to identify sires that transmit ability to make rapid gains.

2. Studies continued on identification and control of dwarfism in beef cattle. Research on diagnosis, control and determining mode of inheritance of dwarfism was conducted cooperatively with several state experiment stations in the Western and North Central regions. Further study was made of the face profile technique developed by the California station. An X-ray technique for detecting dwarf carrier animals is being studied at four locations. Herds of known dwarf producing animals have been established at four experiment stations for heredity studies. Preliminary studies at Oklahoma showed no differences in the thyrotropic and growth hormone potencies of pituitary glands in normal and dwarf carrier animals.

3. Crossbreeding increases commercial farm lamb and wool production. In the past year's tests for each 100 pounds of lamb produced by purebred ewes mated to purebred rams of their own breed, similar ewes mated with purebred rams of another breed produced 117.8 pounds. Crossbred ewes mated with rams of a third breed, thus making a triple breed cross, averaged 119.4 pounds of lamb per ewe. Merino-sired triple-cross lambs, from Hampshire X Shropshire crossbred ewes, were the most productive of all breeds and crosses tested, producing 148.2 pounds, or practically double the production of the purebred Merinos. In wool production, for each 100 pounds of wool produced by the purebred mutton ewes, the first cross mutton ewes produced 115.4 and the triple-cross mutton ewes 130.3 pounds per ewe. Triple-cross ewes sired by Merino rams from Hampshire X Shropshire crossbred ewes produced 166.3 pounds of wool, while production of the purebred Merinos was 203.0 pounds.

4. Research indicates a biochemical basis for bloat. In research at Beltsville to determine the cause of bloat, experimental sheep showed definite symptoms of bloat ranging from slight to moderate-plus after each was drenched with one liter of fresh ladino clover or alfalfa juice. There appears to be definite individual differences between animals in their response to the juice drenches. Bloat symptoms ranging from slight to severe have also been produced by using 15 to 50 grams of a composite saponin preparation prepared from alfalfa by the Western Utilization Research Branch. In addition, other extreme physiological reactions apart from bloat symptoms were observed. No bloat symptoms were produced by using commercial saponin preparations derived from the yucca plant or by using a household detergent, which indicates that the reaction obtained with the alfalfa-saponin preparation is due to other than effects on surface tension.

5. Meat-type hogs prove their value. Further evidence that the seven inbred lines of hogs bred and developed at Beltsville are of superior meat-type breeding was obtained. In the past year, all seven lines yielded over 50 percent of their slaughter weight in the five preferred cuts of ham, loin, bacon, shoulder butt, and picnic shoulder. The Landrace-Poland China line (Beltsville No. 1), for example, had an average of 53.1 percent of preferred cuts based on slaugther weight, while the lowest yielding line, the Landrace-Duroc-Hampshire averaged 50.6 percent. These yields of over-the-counter meat are appreciably higher than the average yield of commercial market hogs over the country.

6. Hand-reared rhinitis-free pigs possible through sanitation measures. The importance of rigid sanitation and isolation procedures in the development of successful hand-rearing methods for the production of disease-free pigs is emphasized in studies at Beltsville. Modification in sanitary techniques, such as improving methods of disinfecting equipment and quarters, or reducing contacts with other swine populations and environments, have materially improved the survival rate of hand-reared pigs.

7. Genetic improvement of poultry through hybridization. In the national cooperative project for the genetic improvement of poultry through hybridization, headquartered at Lafayette, Indiana, several four-way combinations (double crosses) of experimental inbreds were tested for the first time this past year. The best commercial double cross had a 58 percent production for the year, while the best double cross of experimental inbreds was 55 percent. The best topcross (inbred male X openbred female) had 56 percent for the year and the best crossbred 57 percent. These results were considerably better than those obtained from any purebred stock on test. Some of the two-way and four-way combinations of inbred lines showed definite resistance to lymphomatosis, indicating a good possibility of reducing losses from this disease by selection of proper hybrid combinations.

8. Antibiotics increase egg production. When an antibiotic supplement was fed to low-producing hens and to high producing hens on a vitamin B_{12} - deficient diet in tests at Beltsville, egg production of the low producers was increased to that of the high producers. The high producing hens showed no benefit from the antibiotic.

9. Increased egg production from hybrids and crossbred chickens. Crossbreds and incrossbreds (hybrids) derived from selected strains of White Leghorn and Rhode Island Red chickens at Beltsville have produced progeny that attained annual egg production averages of 242 and 255 eggs, respectively, in the past two years. In contrast, outbred Rhode Island Reds averaged 217 eggs and the outbred White Leghorns 211 eggs per year. The results point the way to probable further increase in commercial egg production in the nation, when and as needed.

10. "Green rot" detection device perfected. A machine for the automatic detection of Pseudomonas rots has been developed at Beltsville, Maryland, in cooperation with the Agricultural Engineering Research Branch and the Agricultural Marketing Service. This machine uses so-called "black light" and operates on the fluorescent properties of egg and egg components. Tests show that the detection of such rots in eggs is possible with great accuracy and for very low levels of infection.

11. Antibiotics in rabbit rations reduce losses due to enteritis. At the U. S. Rabbit Experiment Station, Fontana, California, a 2 percent increase in the rate of gain in live weight of rabbits was produced by supplementing an alfalfa hay pellet diet for young developing does from 2 months of age until they were ready to go into production at 6 months of age with 10 grams of aureomycin and 9 milligrams of B_{12} per ton of pellets. The quantity of feed required to produce a unit of gain was reduced 1.8 percent by such feeding. Enteritis mortality during the development period was reduced 25 percent below that experienced with control lots not receiving the antibiotic supplement.

Dairy Husbandry Research

1. Udder development in calf indicates future milk production. Palpation measurements of the degree of udder development made on 222 Holsteins and 222 Jersey heifers at 4 to 5 months of age were found to be good indicators of their milk production at maturity. Heifers with advanced udder development produced more milk as cows than those with average or retarded development. For each increase in palpation grade there was a corresponding increase in milk production per lactation, averaging 884 pounds for Holsteins and 347 pounds for Jerseys.

2. Heat tolerance is higher in Sindhi-Jersey crossbreds than in Jerseys. Under experimentally imposed temperatures of 105°F. for 6 hours, mean rectal temperatures (used as an indication of heat tolerance) are higher in purebred Jersey heifers, dry cows, and milking cows than in first-generation Sindhi-Jersey crosses. The body temperature rise decreases with age in heifers, with the progress of lactation, and with the amount of milk produced per day. This indicates that Sindhi-Jersey crosses would better tolerate the higher temperatures in certain parts of the country.

3. Causes of infertility in dairy cattle revealed. In cooperative work at Wisconsin it has been shown that about 40 percent of all potential young in dairy cattle are lost 60-90 days after breeding. The percentage distribution of losses are estimated as follows: 3 percent from genital abnormalities in the cow, 9 percent from defective ova, 12 percent from failure of fertilization from undetermined causes; and 16 percent from death of the embryo.

4. DHIA and sire proving work at new high. On January 1, 1954, there were 1,311,698 cows enrolled in Dairy Herd Improvement Associations, with 41,254 herds enrolled in 2,175 associations. During the past year 501,582 records were reported for sire proving and 4,990 sires were proved, the largest number of provings for any one year. The average production per DHIA cow for 1952 was 9,192 pounds of milk and 366 pounds of butter fat.

5. Use of proved sires in artificial breeding increases. During the past year more than 5 million dairy cows in 572,000 herds were enrolled in artificial breeding associations. There were 2,598 sires in breeding studs, of which 36.9 percent were proved sires. The average number of cows bred per sire was 1,925. The proved sires in artificial breeding studs had been proved in the sire-proving program. Their daughters, on the average, produced 11,176 pounds of milk and 473 pounds of fat. The dams of the daughters averaged 10,375 pounds of milk and 429 pounds of fat.

6. Feeding value of hay of different U. S. grades determined. In feeding tests, dairy heifers gained 1.73 pounds body weight per day when fed U. S. No. 1 grade alfalfa, compared to 0.91 pounds when fed U. S. No. 2 grade alfalfa-heavy timothy mixed hay. The dry matter consumed per pound of gain was 10.6 and 16.6 pounds, respectively. On this basis, the U. S. No. 2 alfalfa-heavy timothy mixed hay was worth only 65 percent as much as the U. S. No. 1 alfalfa hay.

Animal Disease and Parasite Research

1. Studies of susceptibility of cattle to brucellosis aid research on immunizing agents. Limited studies have shown that age has little or no influence on susceptibility of cattle to Brucella abortus infection. These results are extremely important because a standard dosage and method of exposure may be employed on different age groups of cattle for the evaluation of immunizing agents.

2. Normal resistance of cattle to mastitis studied. To determine those factors which influence the normal resistance of a cow to udder infection in mastitis, a test has been used which measures the relative activity of Streptococcus agalactiae in milk samples by the amount of acid produced. Using this test, the level of resistance of milk to the activity of agalactiae was found to be highest in young animals and in the lower producing animals. It was also found to be influenced by the kind of feed eaten and by the stage of lactation, being higher during the early stages of lactation. Sudden losses in resistance occur when cows are first put out on a lush legume pasture.

3. Foot-and-mouth disease research continued in Europe. Propagation of foot-and-mouth disease virus in embryonated eggs has yielded promising results for possible use in vaccine production. Experiments looking toward the use of frozen tissue culture foot-and-mouth virus as the inoculum for growing virus for vaccine production have not proved successful.

 Nine fungicides to control yeast and fungi contaminants in the production of foot-and-mouth disease virus vaccine have been tried. Three of them proved effective: namely, 3% hydrogen peroxide, 1/20 M. salicylic acid in 70% alcohol, and 1% sodium-orthophenylphenate in 20% alcohol.

4. Immunization for swine erysipelas studied. Very encouraging field reports on swine erysipelas adsorbate vaccine have been received from Europe, where this vaccine was developed shortly after World War II. The advantage of this type of biologic lies in the fact that it does not contain living organisms. Tests were conducted in pigs with two experimental vaccines (bacterins) of this nature. Results indicated that, while some degree of protection was induced, which may warrant use of this type vaccine in this country, the degree and duration of immunity did not measure up to the test results obtained with culture-serum vaccination which were conducted under practically parallel conditions.

5. New Pasteurella species identified. Work has been done for some time with a disease organism that has been called a Pasteurella variant with characteristics the opposite of P. multocida, which causes fowl cholera. After careful study it has now been decided that this Pasteurella is a new species, which has tentatively been named Pasteurella gallinarum. The chicken is the only animal from which it is commonly isolated. This opens up a new line of attack on fowl cholera.

6. New information obtained on vesicular exanthema virus. Recent work shows that swine exposed by intravenous inoculation shed the vesicular exanthema virus on direct contact with normal animals for only 120 hours, beginning 12 hours before vesiculation and continuing for about 103 hours after primary vesiculation. The virus is generalized throughout the body tissues of an infected animal, and all tissues are infective prior to vesiculation and continuing for 136 hours following vesiculation when fed to susceptible swine.

7. Advances made in studies of chronic respiratory disease or air-sac infection in poultry. A technique has been developed for distinguishing the agent of chronic respiratory disease (CRD) when it is a contaminant in live-virus poultry vaccines. This assures elimination of the possible spread of CRD by use of such vaccines. Stronger evidence that CRD may be transmitted through the egg has been established. Positive methods of diagnosis of CRD can be accomplished by cultural, bird-inoculation, and histopathological procedures. Though mortality from CRD has not been quite so spectacular in the past year as in the year preceding, the disease has now spread to the major poultry-producing areas in the United States.

8. Method for diagnosis of anaplasmosis developed. A method for the production of a diagnostic antigen for use in the detection of carriers of anaplasmosis in cattle has been developed. This advancement makes a new tool available for use in the control and eradication of anaplasmosis if field tests prove satisfactory.

9. Method developed for field immunization of mink against distemper. A practical method for field immunization of mink against distemper has been developed. The young kits are given an airborne exposure with a modified chicken-egg adapted strain of distemper virus. Satisfactory immunity was established on 250 mink in limited experimental and field tests.

10. Toxicological effects of insecticides, herbicides and fungicides on animals studied. A study of the toxicity of various insecticides administered into tissues of animals to obtain effects indicated that many insecticides, particularly the chlorinated hydrocarbons, would produce such extensive tissue residues as to preclude their use on animals used for or producing food products. Feeding of insecticides as contaminants of animal feedstuffs indicated that there was no great danger of toxic effects upon sheep and cattle by expected quantities of such insecticides, but that the residues produced in fat, and therefore in meat if the animals were used for human food, varied considerably.

11. Chemical promising against trichomonads. In tests of treatments for destroying trichomonads made during the past year, acriflavine, a chemical, showed considerable promise. These parasites affect the reproductive system of bulls and produce abortion in cows. A few bulls were apparently cured, either with acriflavine or with a preparation containing this chemical.

12. Treating cattle with phenothiazine reduces grub infestation. Free-choice ingestion by cattle of a mineral mixture medicated with phenothiazine proved useful in sharply reducing cattle grub infestation. Cattle having access to the medicated mineral mixture, containing 10 percent phenothiazine, harbored an average of 8 grubs each throughout the season, whereas cattle with access to non-medicated minerals harbored an average of 36 grubs each. The phenothiazine mixture also prevented roundworm infestation of the digestive tract.

13. Benzene hexachloride effective in scabies eradication. Benzene hexachloride (BHC) at a concentration of 0.075 percent proved effective in eradicating psoroptic scabies from cattle in extensive trials carried out in Colorado and Arizona. In most of the tests, 2 treatments by spraying or dipping were given 2 weeks apart. Successful results also were obtained in Colorado with a single spraying. In an outbreak involving 11,500 head in 26 herds, located in 15 counties of 6 States, this chemical was used successfully for eradication purposes.

14. Studies of nodular worm in sheep indicate possibility of danger in raising cattle and sheep on same pasture. Several species of cattle parasites, including the nodular worm, some of which have been found only rarely in sheep, were transmitted to sheep experimentally. The nodular worm produced intestinal lesions in 2 out of 3 lambs, the lesions being as numerous in the lambs as in calves exposed at the same time.

15. Hair stomach worms from cattle affect sheep. A strain of hair stomach worms, originally obtained from cattle which had become severely affected, with a rather high mortality, proved equally injurious to sheep. After several passages through lambs, the strain killed 5 out of 6 infected sheep with ante-mortem symptoms of acute, continuous, or intermittent diarrhea.

16. Parasites in lambs controlled with medicated salt. Intestinal wireworms and stomach worms in lambs have been controlled by continuous reliance on free-choice ingestion of salt medicated with phenothiazine. These 2 common parasites of lambs are very injurious in combination. In a period of only 8 weeks, lambs having access to the medicated salt gained 8-1/2 pounds more than control lambs eating salt alone. None of the medicated lambs died, whereas some of those eating plain salt succumbed to these parasites.

17. Rats may play a role in the dissemination of atrophic rhinitis. Trichomonads along with other organisms obtained from the noses of pigs were grown successfully in the nasal cavities of rats. From there they were transferred back to susceptible pigs where they grew profusely and produced atrophic rhinitis.

18. Transmission of blackhead disease of chickens studied. The causative agent of blackhead of chickens and turkeys was found to be transmitted principally through the eggs of cecal worms, other means of transmission apparently being relatively unimportant. Tests showed that the causative unicellular parasites survive only a short time in poultry droppings. However, when located in the eggs of the cecal worm, which protect them, they survive a long time even under adverse conditions.

ADMINISTRATION OF PAYMENTS TO STATES, AND TERRITORIAL RESEARCH

Current activities: For work to be performed under Federal grant funds, new and revised research proposals from the State Agricultural Experiment Stations are evaluated and approved, annual programs and budget allotments are reviewed and approved, work and expenditures of each experiment station are examined in the field, and assistance is rendered to States in the organization, planning and coordination of research. Agricultural Experiment Stations are operated in Puerto Rico, Virgin Islands, and Alaska. Research is conducted in Puerto Rico primarily on tropical and subtropical crops of economic importance to the continental United States including food, forage, and specialty crops. Research and extension work is conducted in the Virgin Islands in the fields of soil and water conservation, improvement of crop plants for commercial and home use, and development of better rural living conditions. Research in Alaska, carried on as a joint program of the Department and University of Alaska, includes soil analysis, horticulture, animal husbandry, agricultural economics. agricultural engineering, insect and plant disease control, and field crop improvement studies.

Selected Examples of Recent Progress

Virgin Islands

1. Forage crops improved. Livestock is second only to sugar in importance to the agricultural economy of the Virgin Islands. One of the first efforts made by the new research and extension program was to introduce new varieties of legumes and grasses to improve forage conditions. The Islands have a long dry season, and much of their agricultural area is adapted only to pasture crops. Tests of 17 varieties of alfalfa indicate wide differences in the ability of this crop to withstand the local climatic conditions. After two harvests, Buffalo alfalfa produced nearly 19,000 pounds of green matter per acre, or considerably more than any other variety tested. Similar tests with a wide variety of grasses indicate so far that merker grass is superior to other tropical varieties. It was found that pasture combinations of merker grass and velvet beans would produce up to 24,000 pounds of green forage per acre, or considerably more than any other grass-legume combination tested. Of nearly 150 varieties of sorghums tested for adaptability, only one or two appeared well adapted, producing more than 20 tons of green matter per acre.

2. Inexpensive weed control measures developed. One of the serious difficulties in the development of good pastures in the Virgin Islands is the rapid growth of acacia. This plant spreads rapidly and requires constant attention if pastures are to be maintained. In a number of experiments testing different types of herbicides, it was determined that in smaller acacia trees, 2,4,5,-T was effective for control of the pest. With larger trees, averaging 4 to 6 inches in diameter, the best method of control was kerosene applied to the lower trunk of the tree and at ground level. These methods are much less expensive than the common practice of digging these trees with a bulldozer or clearing brush by heavy mechanical means.

3. Extension activities initiated. To carry out the requirement that an extension program be developed for the Virgin Islands, the extension agent and the home demonstration agent organized four 4-H clubs at different locations on St. Croix. These clubs have been active throughout the year and both boys and girls participate. They have completed a number of projects including needlework, gardens, canning, and minor poultry raising. An active program of dissemination of pertinent information to local farmers has been established through cooperation with local newspapers and radio stations. The first agricultural demonstration was conducted at the station on January 17, 1954, to show local farmers the benefits of better methods in cultivating or growing various food crops. In an effort to be of greatest possible assistance to rural people, Federal and local government agencies are cooperating in a comprehensive rural progress program.

Puerto Rico

4. Wheat varieties screened for resistance to stem rust. In cooperation with the Field Crops Research Branch, two nurseries, each containing over 10,000 varieties of wheat, were established--one at the Federal Experiment Station in Puerto Rico and the other at St. Croix, Virgin Islands. The purpose is to test these varieties for their resistance to specific races of stem rust in a location where wheat is not grown as a crop and wheat stem rust is not an endemic disease. The tests showed that a number of varieties were resistant to various races of rust, and would therefore be valuable in the wheat breeding program to develop commercial varieties with necessary rust resistance.

5. Inexpensive method of bamboo propagation developed. The native bamboo of the West Indies has relatively little value owing to its great susceptibility to insect infestation. Selections from foreign introductions of bamboo are relatively disease resistant and are valuable for commercial plantings to produce bamboo for structural or handicraft use. Such plantings have been hampered by the difficulty of having to ship whole clumps, which are relatively heavy. A method of propagating bamboo by whole-culm cuttings has been developed, and nine species of clump-bamboo can be propagated commercially by this method. This should make possible wider distribution of improved varieties of bamboo.

6. Vanilla hybrids developed. The first interspecific vanilla hybrids reported have been grown at the Federal Experiment Station in Puerto Rico. These hybrids are crosses between the commercial vanilla variety, of high quality but with great susceptibility to vanilla root rot, and a noncommercial variety with resistance to the disease but poor commercial quality. The fruit quality of the hybrids is not equal to the high quality parent, but it does compare favorably with the commercial Tahitian-grade vanilla. This program will be continued in an effort to develop high-quality, disease-resistant plants.

7. Research on black pepper as commercial crop being conducted. Through cooperative arrangements, 8 clones of high yielding black pepper have been obtained and are being increased for studies concerning propagation and cultural needs for this crop. Since most of the world supply of black pepper comes from unsettled areas in the Far East at the present time, black pepper may develop into a commercial crop in Puerto Rico.

Alaska

8. Profits from dairy beef steers demonstrated. The Alaska Experiment Station has measured the cost of producing meat from yearling dairy beef steers in the Matanuska Valley and in the Fairbanks area. It was possible to raise steers in the Matanuska Valley with a 0.39-pound daily gain on winter roughage and a 1.9-pound daily gain on summer mountain range. Near Fairbanks the winter gain was 0.54 pound per day and the summer gain on woods pasture 1.52 pounds. The average cost of producing the steers was $179.47 and the slaughter value was $244.10, showing a profit of $64.63 per animal.

9. Rapid grain dryer developed. In Alaska grain sometimes has to be harvested with a moisture content as high as 30 percent. For safe storage such grain must be dried quickly to a moisture content of not more than 14 percent. The Alaska Experiment Station has developed a method for doing this at a rate of about 4 percent drop in moisture content per hour. A 1-ton, batch-type feed mixer was made into a drier by putting a heat and air attachment on it. Fuel and power costs were $3.63 per ton, not high when measured in terms of grain prices in Alaska.

HUMAN NUTRITION AND HOME ECONOMICS RESEARCH

Current activities: Investigations are conducted on nutritional requirements, the composition and nutritive value of various foods as purchased and as eaten, the principles of utilization underlying consumer selection, preparation and preservation of foods. Studies also are made of the practices and problems of families in the buying, utilization and management of food, clothing, housing facilities and other items, and of the kind of living achieved by various population groups. Basic investigations are made of the properties, qualities and relative utility and economy of various foods, fabrics and other goods used by families to assist families in selection, care and use of the goods, services and resources available to them.

Selected Examples of Recent Progress

1. Cooking quality of potatoes studied. Potato buyers need guides to select potatoes best suited for specific purposes. Cooking tests of six varieties over two crop years, cooperative with the Agricultural Marketing Service, showed that mealiness, a quality prized for baking, differs not only with variety but also for the same variety grown in different locations and soil conditions, or in different crop years. For example, Katahdins from an Eastern State

were among the lowest in mealiness, those from a Western State among the highest. Green Mountains were higher in mealiness in 1948 than in 1949 from the same two locations. Extreme sloughing (a cause of cooking waste) was found in Irish Cobblers from two locations but not from others. Furthermore, duration and temperature of storage affected flavor and texture of the cooked product as much as variety and conditions of production. In analyses to learn whether predictors better than specific gravity could be found for cooking quality of potatoes, 3 constituents of raw potatoes - dry matter, alcohol insoluble solids, and starch--proved equally good forecasters of quality.

2. Serviceability of sheetings studied. The effect of substituting rayon for cotton on the serviceability of fabrics such as sheetings was shown by a study cooperative with the University of Tennessee and Kansas State College. In the first 5 launderings of sheets originally 104 inches long, rayon-cotton blends shrank 12 inches and the all-rayon sheets 19 inches as compared with a shrinkage of 8 inches in all-cotton sheets. Total weakening from successive launderings and wear periods was about the same for all of the fabric types, but the weakening attributable to laundering alone was greater for rayon than for cotton.

3. Two-temperature walk-in refrigerator developed. Construction drawings and instructions for building are now available through the Regional Plan Exchange Service for a two-temperature walk-in refrigerator designed for farm-home construction. Developed by home economists and agricultural engineers, the operation and adequacy of this design have been tested in the laboratory and by farm families and have been found satisfactory from the standpoint of ease and cost of construction, economy of operation and upkeep, and adequacy for the storage of food for home consumption. Construction drawings have already been requested by several thousand farm families through State Extension engineers.

4. Food of city families - market and nutrition implications. A final report on a large food consumption study of families in representative cities shows wide variations in use of various types of food. For example, milk consumption data (including milk equivalent of cheese, cream, and ice cream) show that 29 percent of families consumed at home less than 3-1/2 quarts per person a week; 30 percent of families, 3 to 5 quarts; 27 percent, 5 to 7 quarts; and 14 percent, more than 7 quarts. Such facts (1) point to possibilities of market expansion and opportunities for nutritional betterment among families using little of some groups of foods; and (2) indicate how much maximum consumption may be with existing economic conditions and food habits. The potential of increased consumption with rising real income was found to be largest for fresh fruits, followed by canned fruits and vegetables, meat, milk, fresh vegetables, and eggs.

5. Food facts for consumer education published. A convenient series of publications on various foods is being prepared by research home economists. For these publications findings from current USDA and other recognized research on food and nutrition are evaluated and organized for use in educational programs for consumers. Current public concern with nutrition has increased the need for authoritative interpretation of nutritional facts. These publications also discuss other topics of interest to consumers, such as market grades and standards for various foods, seasonal availability, kinds and qualities on the market, selection, use and care in the home. Bulletins are available on tomatoes, peaches, beef, pork, and milk; one on bread is in preparation. The bulletins "Beef" and "Milk and its Products" have been widely used in recent industry-government programs designed to move surpluses.

6. Family financial security data developed. Illustrations of the comparative needs and resources of an average farm-operator family and an average non-farm wage-earning family in building family financial security, were developed for use in farm and home planning programs. The burden of family support at different stages of the family cycle was considered and the illustrative protection programs developed took account of the farm family's need for investment to reach the goal of farm ownership, the sums that might be spent for insurance, and the protection provided the wage worker's family by Old Age and Survivors Insurance.

UTILIZATION RESEARCH

Current activities: Investigations are conducted in the field of chemistry and related physical and biological sciences to develop new and improved foods, feeds, drugs, fabrics, industrial chemicals, and other products from agricultural commodities; to devise improved methods for evaluating the suitability of commodities for processing; to devise better processing methods; to increase the use of byproducts; and to solve waste disposal problems thus effecting maximum utilization of agricultural commodities.

Selected Examples of Recent Progress

1. New process lowers cost of producing dextran. In a newly developed process, clinical-size dextran--a blood-plasma extender--is made by direct enzymic synthesis from sucrose. Pilot-plant study of this process has demonstrated that about 24 percent by weight of the total sugar is converted to dextran. This yield is approximately double that obtained by any previous process. The increased yield, coupled with simplified plant operations, is expected to lower production costs. Such practical use of synthesizing enzymes opens up a hitherto unexploited approach to the development of useful biological products from agricultural raw materials.

2. Metal inactivator improves flavor stability of soybean oil. An improved acidic metal inactivator has been developed to improve the flavor stability of soybean oil and its products. Small amounts of the acid inactivate trace amounts of metals, such as iron and copper. If these metals are not inactivated, they give rise to undesirable flavors in soybean oil and its products. The newly developed acid also reduces intensity of off-flavors in soybean shortenings and lengthens edible life of potato chips fried in the shortening. Use of this metal inactivator to improve other edible fats is expected.

3. Bagasse pith makes new dry-molasses feed. Pith from sugarcane bagasse is a superior absorbent for molasses for use in feeds. Wet-process methods for producing this highly absorbent pith have been developed and have received pilot-plant and commercial trials. Pith obtained by the new methods is much more absorbent than that obtained by screening dry, raw bagasse. Clean fiber needed especially for papermaking and highly suitable for litter and mulch is obtained as a co-product.

4. New basic data illustrates method to delay souring of freshly harvested rice during storage. Because of its high moisture content, freshly harvested rice stored immediately without drying may turn sour in a few hours. Microorganisms grow readily on the moist seeds, with yeasts or molds multiplying very rapidly in the bins. No evidence was obtained that bacteria contribute to the deterioration of rice handled normally. Although sealed-bin storage has been recommended for other grains, tests conducted in cooperation with the Louisiana Rice Experiment Station showed that this practice was detrimental to moist rice. It promoted souring and yeast growth and destroyed viability. Circulation of air through the moist rice seemed to delay souring.

5. New instrument measures nepping tendency of raw cotton. A new instrument can be used with good reliability to measure the tendency of lint cotton to form neps--minute tangled masses of fibers produced during processing. Heretofore, costly spinning tests were required to determine the nepping potential of cottons. The new instrument will help cotton manufacturers select the right cottons for their purposes. Cotton breeders can use the instrument to select progenies of low nepping tendency early in the breeding cycle. This instrument, called the "Nepotometer," is now available commercially.

6. Quality of canned pink grapefruit juice improved. Maturity-color studies indicate that canned juice of good color and quality may be obtained from Texas pink and red grapefruit during the period from early November through January. One promising method developed at the Department laboratory in Weslaco, Texas, is to add back to the expressed juice very finely dispersed pulp. The pulp contains most of the colored pigments and imparts to the juice an attractive color resembling that in the fresh fruit.

7. Improved fiber test gives more reliable predictions of yarn strength. Research to determine the optimum guage length for making flat bundle tests on the strength of cotton has demonstrated that a greater-than-zero spacing between the testing jaws gives a better prediction of yarn strength. With this modified technique, the jaws holding fibers are spaced 2 to 4 millimeters apart, rather than with jaws touching, as has long been the practice. In this way measurements are made on a length of fiber section corresponding to that contributing to yarn strength. Variation in results owing to fiber slippage during the test is greatly reduced. Reports indicate that the new technique is being adopted by cotton breeders and by textile technologists for research and control purposes.

8. Cottonseed meal attains new utility in feeds. For the first time, cottonseed meals of specified composition are being widely used in rations for chicks and broilers. Meals of this type command a premium price over usual cottonseed meals and in most instances have reduced the feed cost for the poultry industry. This development is the outgrowth of a comprehensive research program conducted cooperatively by the Department and State agencies, the National Cottonseed Products Association, and private companies. Results thus far indicate that chick and broiler rations containing cottonseed meal and soybean meal in equal proportions on a nitrogen basis are equal or superior to rations based on either cottonseed meal or soybean meal alone.

9. Basic studies of cotton fiber structure benefit chemical finishing. The primary wall, or thin "skin" on the outside of cotton fiber has been separated and its properties and reactions determined. The findings provide for the first time a clear understanding of the composition and structure of the wall and of what happens to it during conventional finishing treatments. Cellulose is the principal constituent of the primary wall. Substantial amounts of wax, pectin, and nitrogenous substances are also present. Response of the primary wall to swelling and shrinking during mercerization - an important conventional process - is increased enormously by purification treatments. Armed with these new basic data, chemists are in a better position to improve the chemical finishing of cotton.

10. Superconcentrated juices require no refrigeration. Superconcentrates of apple juice have been developed that are nearly twice as concentrated as the commercial 4-fold frozen concentrate. These superconcentrates can be packed in tins to keep at room temperature for 6 months or more. The savings in packaging and refrigeration costs in marketing the product make it extremely attractive to industry.

11. Successful process developed for treating dairy wastes. Stream pollution from wastes of dairy manufacturing plants is one of the most urgent problems confronting milk processors. Many plants face legal action unless the nuisance is abated. A simple and effective laboratory method based on oxidation with bacteria by means of aeration, has been developed for treating these dairy wastes. Pilot-plant studies carried out under contract by Pennsylvania State

University during the past year, show that the laboratory process is effective and feasible for use on a commercial scale. As a result, several full-scale treatment plants have been built. The first of these plants has been in operation several months with excellent results.

12. Mashed potatoes produced in flake form. A dried mashed-potato product has been developed in flake form. It reconstitutes rapidly to a smooth mash with either hot or cold water. Although work on this product is not yet complete, it appears that the process is comparatively cheap and that the product has good color, consistency and flavor. It should be generally acceptable for military and civilian use.

13. Tomato juice successfully reduced to dry powder. Tomato juice has been successfully reduced to a powdered product that can be reconstituted readily into a high-quality juice. Storage tests show that this powder stays essentially unchanged in color, flavor, and nutritive value after prolonged storage under severe high-temperature conditions. Since tomato juice contains about 94 percent water, this development makes possible significant savings in packaging, storage, transportation, and distribution of tomato-juice solids.

14. High-temperature scald is satisfactory for frozen turkeys. Procedures have been worked out in cooperation with the poultry processing industry to assure acceptable quality of frozen turkeys that are scalded at 140°F. (instead of the old standard 125° - 130°F.) for removal of pinfeathers. A substantial reduction in processing cost is achieved by using the more drastic scalding conditions. However, unless subsequent steps are modified appropriately, defects in the appearance of the frozen birds adversely affect their market quality. Skintight packaging with a moisture-impervious film and very rapid freezing of the surface of the bird are keys to the success of the new procedure.

15. Improved method of treating wool-scouring waste. A method has been developed for treating wool-scouring waste liquors making possible a substantial reduction in stream-pollution. It also improves the quality of recovered wool grease. The new process involves addition of 0.1 - 0.3 percent of a special kind of clay (bentonite) to the acidified waste liquors. Coagulation of suspended solids occurs immediately, and the settled sludge is readily dewatered and extracted to recover the grease. Effluent from the system is substantially free from grease, the most objectionable stream-polluting constitient.

16. Dehydrofrozen fruits and vegetables produced commercially. Commercial adoption of dehydrofreezing, the process for preserving fruits and vegetables by freezing after partial dehydration, developed by the Department has proceeded actively during the past year. Dehydrofrozen apples were produced in 1953 both in New York and in California for use by bakeries. Dehydrofrozen apricots, green peas,

okra, carrots, and lima beans are being offered by processors in 1954. Trials have been made of dehydrofrozen celery and green beans for use in soups. Acceptance of the dehydrofreezing process by packers has been based in part upon successful demonstration of a new type of through-flow rotary drier invented by Department engineers.

17. Baking quality of concentrated skim milk retained during frozen storage. Skim milk, concentrated three-fold and held in frozen storage, retains the characteristics of the original milk as a source of milk solids in bread. At higher solids concentrations the milk still retains its baking quality. However, it develops undesirable physical defects which would make it unsuitable for beverage purposes. These findings indicate the possibility that dairy processors who lack equipment for drying surplus milk may concentrate and freeze it for bakery use.

18. Improved lactometer method to determine total solids in milk. With extension of the practice of buying milk on the basis of its nonfat solids as well as its fat content, emphasis has been placed on the need for a practical, rapid method for determining total solids in milk. Although hydrometers for measuring the density of milk have been in use for a long time, under the conditions used, they have not proved wholly satisfactory. This has been caused chiefly by the differences in the degree of solidification of milk fat at the temperature employed. To obviate this difficulty, a lactometer (milk hydrometer) has been designed for precisely measuring density at a temperature above the melting point of milk fat. Results with this instrument are comparable in accuracy to those obtained with standard but time-consuming weighing methods.

PLANT DISEASE AND PEST CONTROL

Current Activities: The work is divided into three categories: (a) Insect and plant disease control which is designed to protect agriculture from destructive insects and plant diseases, including inspection to detect and appraise infestations, certification of regulated articles, supervision of treatments required by plant quarantines, applications of pesticides, and use of other methods of combating infestations; (b) protective measures, primarily inspections at ports of entry, which are carried out to prevent the introduction from abroad of pests and plant diseases, and certification of the absence of plant pests on plants and plant products for export; and (c) administration and enforcement of the Federal Insecticide, Fungicide, and Rodenticide Act to prevent the sale of mislabeled and inadequately labeled economic poisons, and to safeguard farmers and other users from injury to crops, livestock, or themselves, and from loss resulting from deceptive, careless or fraudulent marketing practices.

Selected Examples of Recent Progress:

Plant Pest Control:

1. Japanese beetle infested area is becoming stabilized. Except for the discovery in July, 1953 of a well established outlying infestation of Japanese beetles centered in the rural area around Sheldon, Illinois, and encompassing several thousand acres in Illinois and Indiana, the generally infested area in northeastern United States was fairly well stabilized. The Japanese beetle was found for the first time in a few new localities, but none was found in any state from which they had not been previously reported. There were small extensions of the Federal-State regulated areas in North Carolina, Ohio, and Pennsylvania, and as a result of surveys early in the fiscal year 1954 state quarantines were amended to include additional areas in southern West Virginia and in Illinois and Indiana near Sheldon.

 An amendment to the Federal Japanese beetle quarantine became effective in the spring of 1954 making it mandatory for aircraft operators, both civilian and military, to provide and apply sprays to aircraft leaving infested airfields during the adult season.

 In February 1954 new treatments were authorized approving the use of toxaphene, heptachlor, aldrin and dieldrin in field plots and in April 1954, an ethylene dibromide injection treatment for balled nursery stock was approved on a limited basis.

2. Infestation of sweetpotato weevil increased slightly. Losses in a single Louisiana area in 1953 were estimated at one and three-quarter million dollars due to environmental conditions favorable to weevil outbreak. While there was an increase of 38 percent in the intensity of the infestations during the year, there was little increase in the numbers of new infestations found.

From 1937 through 1953, the weevil has been apparently eradicated from 53 counties of Alabama, Florida, Georgia, Louisiana, Mississippi, South Carolina, and Texas. During 1953, planting restrictions were removed from 1,149 formerly infested farm units. Infested counties in the six cooperating states were reduced from 54 to 50.

3. Citrus blackfly in Mexico threatens Texas citrus industry. Six infestations of the citrus blackfly, outside of the known infested area in Mexico were found in Nuevo Laredo across the Rio Grande from Laredo, Texas, in late May 1954. This infestation, like that in Matamoros, Mexico, found in 1953, is a real threat to the Texas citrus industry, since only the narrow channel of the Rio Grande River separates the citrus plantings in Mexico from those in Texas. Eradication steps were taken immediately. It is hoped that this infestation was found before the insect had an opportunity to spread and become established in Texas.

The infestation reported last year in Matamoros, Mexico, has apparently been eradicated. Repeated inspections in that city have failed to reveal the blackfly. Incipient infestations, however, have been found throughout the citrus-growing area of northeastern Mexico, north of the area of general infestation. These, too, have been eradicated as fast as discovered.

4. Mexican fruit fly discovered for first time in Far West. Early in 1954 the Mexican fruit fly was discovered in Tijuana, Mexico, a short distance from the international boundary. In August 1954, a single live female fly was trapped in San Ysidro, San Diego county, California, which adjoins Tijuana. In cooperation with the officials in the Republic of Mexico and in California and Arizona, intensive surveys were immediately initiated in both countries to determine the extent and nature of this infestation. A spray program was undertaken in both countries surrounding the points of discovery. The State of California immediately placed part of San Diego County under quarantine regulations. To prevent infested mangoes from reaching the northwestern Mexican market, temporary fumigation facilities were established in cooperation with the Mexican Government at Hermosillo, and inspection stations established at strategic points. While it is yet too early to determine the results of these emergency measures, it is hoped that this immediate action will prevent the Mexican fruit fly from becoming firmly established near California. Because of the numbers and kinds of fruits grown in this region it is expected that if this pest does become established there, it will be far more serious and difficult to control than in the citrus area of Texas which becomes infested annually.

5. Incidence of phony peach disease decreased. Incidence of the disease was drastically reduced in both Alabama and Arkansas in 1953. There was a slight rise in disease incidence in Louisiana, Missouri, North Carolina, South Carolina, and Texas. It was

discovered for the first time in Lancaster County, S. C. Outstanding progress was made in suppressing the disease in the Fort Valley, Georgia, area. After three years of area-wide control the percentage of trees infected has been reduced from 8 to 3.2 percent. Disease incidence in the 10 state area dropped from 2.4 percent to 1.8 percent.

A survey for this disease in wild plum resulted in the finding of infected plums in 40 counties of 6 states. Three nurseries in the phony peach regulated area, with less than 500 trees in all, were denied certification because of the possibilities of infection being introduced from neighboring areas.

6. Incidence of peach mosaic declines. There was a slight increase in the incidence of peach mosaic disease during the fiscal year 1954. Surveys for mosaic were made in 63 counties of 10 states during 1954. Trees inspected totaled 2,518,000 of which 3,840 were infected, or 0.15 percent as compared with 4.16 percent in 1935.

Two counties in Arkansas and two in Texas have been released from the states' standard peach mosaic quarantine.

In 1954, 153 nurseries growing 1,275,830 nursery trees to be offered for sale during the 1954-55 selling season, together with their one-half mile environs for phony and one-mile environs for mosaic, were inspected in 26 regulated counties of 9 states. Additional protective inspection was made of 42 nurseries growing 2,606,055 nursery trees and their immediate environs beyond the regulated areas. In the mosaic regulated area, 21 budwood sources and their one-mile environs were likewise inspected and certified.

None of the nurseries in Arizona and New Mexico was certified because of the general peach mosaic infection occuring in these States. The Pest Control officials of Arizona and New Mexico have agreed not to issue certificates for out-of-state shipments of the regulated products from nurseries in their States.

7. Barberry eradication efforts continued. Barberry eradication work continued in 18 cooperating states to eliminate all species of barberry and mahonia that serve as alternate hosts of the stem rust disease of wheat, oats, barley, and rye. Of the 1,033,457 square miles now in the barberry-eradication area, 956,054 square miles are in a maintenance status. This 92 percent of the area will require only a low-cost maintenance program to hold the high degree of barberry control that has been attained. There remain 29,345 square miles that require initial work and 48,058 square miles need rework one or more times in the future.

Field tests with hormone-type herbicides were continued this year in Pennsylvania, Virginia, and West Virginia and gave satisfactory kill of the barberry. Work procedures have been modified to conform

more closely with recent observations on the ecology of the barberry. Factors such as light, soil type, available moisture, and plant cover, as well as competition, temperature, and slope, have been found to account to a large extent for the pattern of distribution of escaped barberry bushes. This modification is particularly adaptable to the rework program, since the pattern of distribution has been largely determined in the initial surveys.

8. State and farmer cooperation aids pink bollworm control. There was much less spread of the pink bollworm in 1953 than in the two preceding years. The thorough cultural control program in that part of south Texas, where some 30 million dollars damage occurred in 1952, resulted in a much smaller carry-over and a substantially lighter infestation in the 1953 cotton crop. Infestation in central Texas was markedly heavier than in 1952 but was considerably reduced in extreme western Texas, New Mexico, Arizona, and Oklahoma. Quarantine measures in much of the area under regulation are of a precautionary nature to prevent further spread. Continued dry weather has permitted early clean-up which resulted in reduced populations.

As of July 1, 1954, ten counties in Oklahoma, three in Louisiana, and two in Arkansas were found infested for the first time. As a result of the new findings, the entire states of Oklahoma and Texas were included in the quarantined area. In Arkansas six southwestern counties in addition to two actually found infested were included, and in Louisiana five parishes were added to the quarantined area including two noninfested parishes located between the old quarantined area and the newly infested parishes.

Six parishes in south-central Louisiana were released from quarantine since repeated inspections over a number of years have proven to be negative.

State mandatory cultural controls were required during 1953 on 2,400,000 acres of cotton produced by 48,200 growers in Texas and 347,000 acres by 33,500 growers in Louisiana. Emergency cultural control areas were established in 8 Arkansas counties and voluntary programs were supervised in some 50 counties of east Texas. Excellent farmer cooperation was received and the programs throughout all areas are believed to be the most successful on record.

For the first time since cultural controls were inaugurated, farmers were allowed to apply growth-arresting herbicides to cotton fields where picking had not been completed by the deadline dates. Approximately 5,000 acres on 100 farms were treated with the herbicide.

Florida promulgated a regulation in 1953 prohibiting the planting and production of cotton, including dooryard or ornamental plants, in 19 southern Florida counties. This regulation has expedited the removal of dooryard cotton when found by crews engaged in ridding southern Florida of wild cotton and individually-grown cotton plants.

9. Golden nematode located in additional New York areas. In fiscal year 1954, new infestations of the golden nematode were found on 1,156 acres on Long Island, New York. The majority of the fields containing these infestations were intermingled with or adjacent to known infested fields in Nassau and Suffolk Counties. In most cases the infestations are known to occur only in spots on the properties involved. Three additional nurseries and retail plant sales establishments were found infested, making a total of 97 to date.

A compensation program for the purpose of preventing increase and spread of the nematode was continued during the year. Owner-operators of 943.15 acres withheld their land from potato or tomato production. The Federal and state governments shared equally in reimbursing the owner-operators at the rate of $60 per acre.

Surveys for the golden nematode in tomato and potato producing regions of 14 southeastern and southwestern States were negative. Approximately 5,300 soil samples representing 40,800 acres were collected and processed with negative results.

10. Infested zone of white-fringed beetle decreased by 11 percent in three years. While the 1953 surveys indicated an expansion of the infested area by 45,780 acres to a total of 422,500, three years' control work shows a net reduction of over 11 percent in land infested by the white-fringed beetle. The gross figure includes 156,000 previously infested acres that are not now known to be infested. Not only has the infested zone diminished, but beetle population densities have declined each year since DDT came into extensive use for controlling the pest. A preliminary summary of the 1954 survey indicates the infested acres found amount to approximately 27 per cent less than the infested acreage found in 1953.

These population reductions are largely attributable to extensive soil treatments that have been applied by States, farmers, industrial firms, and private individuals. Funds expended for the 1953 control work were supplied approximately as follows: Industrial firms, communities, and individuals, 21 percent; farmers, 20 percent; railroads, 10 percent; nurserymen, 8 percent; state agencies, 9 percent; and the Federal government, 32 percent. Late in the fiscal year dieldrin was accepted by the Department for control of the white-fringed beetle on nongrazed, noncrop land.

11. Hall scale eradication efforts accelerated. An extension of an earlier infestation at Chico, California was detected during 1953 and treatment was immediately undertaken. In the Bidwell Park and Stilson Canyon infestations in Chico and in the city of Oroville, California, all properties within a 2,500-foot radius from the center of each infestation were treated during the final months of 1953. At Davis, California, due to the lightness of the infestation, treatments were limited to a 1,000-foot radius. The finding of an infested seedling at Bidwell Park in 1954 where

eradication was presumed to have been completed will involve re-treatment or removal of an additional 1700 trees. An increase in funds contributed by the California Department of Agriculture, made it possible to employ six fumigation crews and purchase additional equipment and material during the 1953-54 season. Continued host removals throughout the year totaled 3,935 and greatly reduced the number of hosts needing treatment.

12. Gypsy moth found for the first time in Michigan. A serious outlying infestation of gypsy moth was found in the vicinity of Lansing, Michigan, late in May 1954. This infestation represents the most westward advance of the gypsy moth. State and Federal authorities initiated an immediate survey to determine its extent. It was subsequently found in several scattered locations in the Lansing area. Within 20 days of the initial discovery, 86,400 acres, including the entire city of Lansing, were sprayed by aircraft. DDT was applied at the rate of 1 pound per acre. Trapping of a million acres in Michigan after spraying indicated excellent treatment results, only 4 of the 5,000 traps capturing male moths.

During the spring of 1954 more than 1,400,000 acres were sprayed by cooperating Federal, State and local agencies and organized groups of individual land owners in the States of Connecticut, Maine, Massachusetts, Michigan, New York, Pennsylvania, and Vermont. Following the most damaging year in the history of the gypsy moth in the United States when 1½ million acres were defoliated, populations of the gypsy moth in the generally infected area in New England and New York dropped considerably. In 1954 slightly less than 1/2 million acres were defoliated, the greatest reduction in damage occurring in Massachusetts.

13. Grasshopper control saved crops worth $10,000,000. Grasshopper infestations on private and public rangelands totaling 787,580 acres in Colorado, Idaho, New Mexico, Oregon, Texas, Utah, and Wyoming were controlled in 1954. Work on State and privately-owned rangelands were generally financed one-third each by the ranchers, the States, and the Federal government. Federal land-managing agencies and private individuals using the public domain participated in programs on Federal land by contributing services, equipment, supplies, and funds. During 1954, contract aircraft was used almost exclusively.

Surveys have indicated that a tremendous acreage of previously treated land remains practically free of infestation. In Wyoming, for example, the four and a half million acres of range that were cooperatively treated from 1949 through 1951 required little attention this year. Equally significant long-range protection has been given smaller areas in Arizona, California, Idaho, and New Mexico. State leaders reported that crops having an estimated value of approximately $10,000,000 were saved as a result of grasshopper control in 1953.

Supplementing organized control efforts in 1953, farmers in 20 states bore the full cost of controlling threatening to severe grasshopper infestations on an estimated 1,600,000 planted acres. Federal personnel assisted these farmers by conducting surveys to determine the locations, density, and species of grasshoppers threatening crops, and by advising on preparation and use of recommended insecticides.

14. Mormon cricket infestations reduced. A thorough survey preceding the 1954 field operations supplied timely and accurate information on which to base control operations. Over 121,500 acres in six states were baited during 1954 including approximately 58,600 acres in Utah, 29,600 in Nevada, 20,000 in Montana, and the remainder in Idaho, Colorado and Wyoming. As a result of this work the population buildup was checked and the known infested area sharply reduced. It is estimated that approximately 80,000 acres may need attention in 1955. Aldrin baits spread by aircraft are still the recommended control for Mormon crickets.

15. Economic insect survey. In order to strengthen the collection of information and detection of any newly introduced insects, a plan was initiated whereby joint state-Federal employees devote full-time to the gathering of information concerning insect occurrence, outlook, and injury. One State operated under this plan during 1953. By the end of 1953, seven States were committed to the program, and by June 30, 1954 a total of 18 States had entered into such cooperative arrangements.

During 1953 the economic insect survey section cooperated in special detection surveys to obtain information on the European corn borer in the Western States, and on the cotton stem moth, European chafer, and Matsucoccus scale in the Eastern and Northeastern States. In 1954 considerable attention was given to assisting the States in determining the distribution of the Khapra beetle, a recently discovered introduced pest of stored products.

16. Emergency outbreaks of insects and plant diseases (contingency fund). During the fiscal year 1954, $528,940 was released from the contingency fund to enable the Department to participate in suppressing emergency outbreaks of grasshoppers and Mormon crickets in Idaho, Kansas, Montana, Nevada, California, Utah, Colorado, New Mexico, Oklahoma and Texas. A table reflecting the use of the contingency fund for emergency outbreaks in 1953 and 1954 is attached.

Outlook for current fiscal year regarding emergency outbreaks:

a. Grasshopper and Mormon cricket control. Preliminary observations indicate that the trend in grasshopper populations is upward in the seven states of California, Montana, Oklahoma, Oregon, Texas, Washington, and Wyoming. In Colorado, Idaho, and New Mexico conditions are expected to remain about the same as during 1954. Mormon cricket infestations should be generally less extensive except in Montana and Wyoming, where increases may be expected.

Releases from the Contingency Fund and Date of Release
Fiscal Years 1953, 1954, and 1955 to 12/31/54

Project	Fiscal Year 1953	1954	1955 (to 12/31/54)
Emergency Outbreaks of Insects and Plant Diseases (Contingency Fund):			
Grasshoppers in Wyoming	$ 75,000 (July 1952)	--	
Grasshoppers in Idaho	4,000 (do)	$ 96,440 (June 1954)	
Grasshoppers in Custer National Forest, Montana	5,000 (do)	--	
Mormon crickets in Nevada, Oregon, Utah, Idaho, Colorado and Montana	5,000 (do)	--	
Grasshoppers in New Mexico	80,000 (do)	41,000 (June 1954)	
Grasshoppers in Arizona	29,700 (Aug. 1952)	--	
Mormon crickets in Nevada, California, Utah, Idaho, Montana, Colorado, and Wyoming	210,000 (Apr. 1953)	--	
Grasshoppers in Texas	30,000 (May 1953)	--	
Grasshoppers in Texas, New Mexico, Oklahoma, and Kansas	--	128,900 (July 1953)	
Grasshoppers in Colorado	--	190,000 (June 1954)	
Mormon crickets in Utah, Nevada, California, Idaho and Montana	--	72,600 (April 1954)	
Mexican fruit fly control	--	--	$135,000 (Sept. 1954)
Khapra beetle	--	--	56,000 (do)
European chafer	--	--	50,000 (Dec. 1954)
Total released from contingency fund	438,700	528,940	241,000
Contingency fund reverting to Treasury at end of year	61,300	71,060	--
Balance of contingency fund	--	--	159,000
TOTAL	500,000 a/	600,000	400,000

a/ Excludes $500,000 transferred to "Eradication of foot-and-mouth and other contagious diseases of animals and poultry, ARA".

b. Mexican fruitfly. An outbreak of the Mexican fruitfly in northwest Mexico has caused a major threat to the entire California--Arizona fruit industry. It has been necessary to draw upon personnel and facilities presently engaged in the control of this insect in Texas to meet this emergency. An amendment to the law governing the control of incipient or emergency outbreaks of insects and plant diseases was enacted by the 83rd Congress. It permits the use of such funds in Mexico for cooperation with the authorities in that country. Under the authority of this amendment, $135,000 was released from the contingency fund for controlling the outbreaks of Mexican fruitfly. The State of California, San Diego County and industry are supporting this work to the extent of $139,000; the State of Arizona, $10,000; Mexican Department of Agriculture,$10,000; and Mexican industry, $23,000.

c. Newly introduced pests. Three new pests have recently caused considerable crop damage. At the present time some work of a preliminary nature is being done on these problems by technical personnel, in cooperation with the States. The three pests are as follows:

European chafer control. The European chafer is a destructive introduced pest whose larvae feed on and destroy the roots of many cultivated plants, including pasture grasses, lawns, small grains, and nursery stock. It is known to be established in northwestern New York, where the State with such technical assistance as can be given by the Department is attempting to confine it. Recent extensions of the generally infested area in New York and the constant threat of long-distance dissemination through the movement of nursery stock and other commodities, including soil and gravel, have made it imperative for the Federal Government to become more actively involved in preventing the further spread of this destructive pest. An amount of $50,000 has been released to combat infestations in the vicinity of Buffalo, Syracuse, Elmira, Niagra Falls and Liverpool, New York, Meriden, Connecticut, and at Capon Bridge, West Virginia. It is estimated that $36,000 will be available from State sources in carrying out their share of this work in addition to approximately $15,000 required from industry to comply with the regulations.

Khapra beetle control. The Khapra beetle, a newly introduced pest of stored products, was discovered in November 1953 infesting grain in California. The larvae of this insect are cosmopolitan feeders and have subsequently been found in this country in wheat, oats, rye, barley, flax seed, pinto beans, blackeye peas, and alfalfa seed. The beetle is known to develop on all grain either moist or dry and grain products, including bread, crackers, noodles, and macaroni,

soy beans, peanuts, castor beans, and other commodities. In cooperation with the states, a survey of grain warehouses in 11 Western States was initiated in 1954 to determine the distribution of this pest. It is now known to exist only in storages in parts of California, Arizona, and New Mexico. Control and regulatory programs were undertaken by the State departments of agriculture in cooperation with the owners to control or eradicate known infestations and reduce the hazard of spread from them. Research on the control of this storage pest is underway. A hearing on the proposed establishment of a Federal quarantine was held December 1, 1954. To initiate an adequate joint Federal-state and industry program of survey, inspection, and treatment, $56,000 was released from the contingency fund. States are prepared to contribute approximately $57,500 to the program, and the cost to the grain,seed, and feed industry in providing the insecticides, labor and equipment needed to carry on a successful program of disinfesting establishments already involved will amount to approximately $125,000.

Imported Fire Ant. The imported fire ant is an annoying and destructive introduced pest in the southern United States, occurring in localities along the Gulf Coast and as far north as central North Carolina. It is omnivorous, feeding on many cultivated plants and often attacking young animals. In homes it will feed on meat, animal and vegetable products, and even clothing at times. Because of its painful sting, this ant often interferes with the cultivation of crops and the pasturing of animals. In view of the severe damage this pest can inflict and the indication that it has not as yet become established throughout its ecological range, consideration is being given to a cooperative program with the States to arrest its further spread and to provide property owners with the technical guidance they need to protect themselves from further serious annoyance and injury.

17. Insecticide, Fungicide, and Rodenticide Act.

a. Pesticide regulation found effective. Recognition by farmers of the increasing need for crops of better quality, produced more economically, has been reflected in increased registration of pesticides under the Federal Insecticide, Fungicide, and Rodenticide Act. Basic research, experimental work on new pesticide chemicals, and the development of better techniques of pest control, have contributed to this activity. In 1954 compared with the previous year, there was an increase of about 20 percent in the number of new products registered and an increase of 25 percent in the number of amended registrations. The increase in amended registrations

is largely due to the acceptance of a number of new uses (particularly on food crops) for previously registered materials such as malathion, dieldrin, and heptachlor. The proportion of new and amended label submissions found to be acceptable was considerably higher than that found acceptable in previous years. Registrants have for the most part accepted the necessity for evidence of effectiveness and safety before submission of products for registration.

Among new pesticides found acceptable for registration are streptomycin for control of apple and pear fire blight, endrin, Systox and Chloro-IPC on certain food crops, organic phosphates such as diazinon and Bayer L 13/59 for the control of house flies, and insecticide-fertilizer mixtures. These new uses, when originally proposed, raised problems of public health through toxic residues and have required careful study and consultation with the U.S. Public Health Service, the Food and Drug Administration, and other Federal agencies concerned to avoid injury to humans and domestic animals.

With the expiration on June 25, 1953 of the five-year period following the effective date of the Act, it was necessary to notify registrants of the expiration of all registrations made during the 1949 fiscal year. While this required additional work, it cleared the records of dead materials, including the names of firms which had gone out of business and discontinued products. About 3,500 registrations were cancelled.

The following table summarizes the registration activities:

Registration Activities

Activity	1950	1951	1952	1953	1954	1955 (Est.)	1956 (Est.)
Submissions received 1/	20,203	16,609	17,275	19,906	21,098	20,000	20,000
Carryover from previous year	429	378	269	394	435	400	400
Total submissions requiring action	20,632	16,987	17,544	20,300	21,535	20,400	20,400
Registrations:							
Original registrations	4,007	3,422	2,761	3,536	4,002	4,100	4,200
Supplemental registrations	3,193	3,569	4,853	5,325	7,419	6,000	6,000
Total registrations	7,200	6,991	7,614	8,861	11,421	10,100	10,200
Letters of criticism written	14,900	13,804	14,721	17,086	18,208	17,000	16,000
Pending at end of year	378	269	394	591	304	300	300

1/ Includes original submission, submissions of corrected labeling and supplemental submissions in instances where the originally registered products were in some manner changed after registration.

b. Enforcement work under the Act is being aided by reports which are furnished from the States on cases of adulteration and misbranding which are uncovered by their own investigators. Reports of this kind are followed up to clear the situation on a national basis.

Steps have been taken to establish closer liaison with Federal and State research and extension personnel to achieve an interchange of information on registration actions by the Department and research developments and practical experience with these products by state and Federal personnel.

Special attention has been given to lindane vaporizers which have been widely advertised to the public and which may, if improperly used, cause injury to people who breathe the fumes or eat food contaminated with the lindane. Samples of most such products on the market were examined and in a considerable number of cases seizures were made and correction of the labeling or product required.

The continued introduction of new chemicals for pesticide use has necessitated the development of better methods for their analysis and testing.

The following table summarizes the enforcement activities:

Enforcement Activities

Activity	1950	1951	1952	1953	1954	(Est.) 1955	(Est.) 1956
Samples Examined:							
Not previously sampled	1,204	1,212	1,034	1,132	1,134	850	850
Old products ..	1,017	850	1,051	1,178	667	700	700
Total	2,221	2,062	2,085	2,310	1,801	1,550	1,550
Violations (mislabeled and/or adulterated products)	570	560	572	454	411	400	385
Actions taken on violations:							
Warnings	91	116	102	113	125	100	100
Citations	438	413	399	291	242	240	240
Seizures	67	54	71	50	44	40	40
Prosecutions ..	12	20	10	5	5	20	5

c. Functions under Public Law 518. Public Law 518, approved July 22, 1954, provides a method for setting tolerances for pesticide chemicals offered for registration under the Federal Insecticide, Fungicide, and Rodenticide Act when applied to raw agricultural commodities. It requires this Department, as a prerequisite for the consideration by Health, Education and Welfare, to review each petition for tolerance and certify as to the usefulness of the pesticide for the intended purposes. The Department must also render an opinion to Health, Education and Welfare as to whether the proposed tolerance or exemption reasonably reflects the residue likely to result from the proposed uses. This necessitates a thorough evaluation of the data submitted and the analytical methods used to arrive at the proposed tolerance. The Department has initiated a review of all registered labeling to determine if existing directions for use will result in residues in line with announced tolerances or if revisions in directions for use will be necessary. This review will assist the industry to comply with Public Law 518 more expeditiously and economically. Such review will have to be continued until tolerances are announced for all chemicals currently registered and may continue through calendar years 1955 and 1956.

Plant Quarantine:

1. Workload. Attention was centered on the more important plant quarantine activities in order that the generally increasing normal demands for plant quarantine protection, as well as unforeseen emergencies, could be met with the personnel available. The work performed was at about the same volume level as in 1953. Significant workload figures follow:

Workload Data Fiscal Years 1953 through 1955 Estimated

Item	F.Y. 1953	F.Y. 1954	F.Y. 1955 (Estimated)
Inspection:			
Airplanes, approximately 3½ carrying unauthorized plant material in 1954	79,642	77,029	92,000
Vessels, approximately 30% carrying unauthorized plant material both in 1954 and in 1953	52,036	52,311	52,000
Cargo importations of plant material, under permit	74,099	69,317	74,000
Shipments of plants and plant products, inspected or treated, and certified for movement from Hawaii and Puerto Rico to the mainland	8,398	16,100	17,400

Item	F.Y. 1953	F.Y. 1954	F.Y. 1955 (Estimated)
Containers of cut flowers and leis for movement from Hawaii to the mainland	417,027	488,849	490,300
Containers, plant material treated or cleaned	2,842,501	a/827,656	951,800
Freight cars from Mexico	79,636	81,481	83,300
Foreign mail packages	3,718,205	3,949,054	4,200,000
In cooperation with Customs:			
Vehicles from Mexico	13,499,714	14,367,589	15,200,000
Baggage, airborne, pieces of	2,247,419	2,275,714	3,400,000
Baggage with surface-borne passengers from Mexico	3,923,907	3,664,803	3,840,000
Baggage with ships' passengers, number of passengers	1,147,372	1,169,801	1,300,000
Interceptions:			
Unauthorized plant material, all sources	174,543	170,603	210,000
Lots of insects and plant diseases of plant quarantine significance, all sources	18,030	15,904	18,900
Export certificates issued: Covered 11,850,609 containers of domestic plants and plant products exported to 113 foreign countries in 1954; 9,031,986 containers to 116 foreign countries in 1953	29,643	33,476	37,800

a/ Decrease largely due to change in cotton regulations in May 1953 which removed the necessity for fumigation or other treatment of cotton samples.

2. Improved utilization of manpower and resources. For the most effective use of personnel, three ports were closed, one was opened, and the responsibilities and duties of personnel were studied and realigned where necessary. To meet emergency situations personnel were temporarily reassigned to aid with ocean traffic diverted from New York during the month-long strike at that port. With the finding of the Mexican fruitfly in Tijuana and Mexicali, inspectors were dispatched to the opposite U.S. ports of San Ysidro and Calexico on temporary assignment, pending arrangements to augment the staffs at those ports for the purpose of preventing movement of the pest into California. As a result of the June flood in the Rio Grande, inspectors were temporarily reassigned from Laredo and Eagle Pass to Brownsville and Hidalgo to assist in clearing rail and vehicular traffic diverted to those points.

3. Changes in customs procedure adversely affect plant quarantines. Studies were made of the effect of the new Customs procedure for the inspection of baggage. Customs inspectors now thoroughly inspect a minimum of one piece of baggage for each passenger, additional pieces being examined under certain conditions. Formerly all baggage was given some degree of customs inspection, a procedure relied upon heavily as a plant quarantine safeguard. A study of interceptions of contraband plant material at the port of New York showed 37 percent fewer interceptions from ships' passengers' baggage and a 22 percent decrease in interceptions from plane passengers' baggage as a result of the new procedure. Further study confirmed the fact that baggage is an important avenue for pest entry. Despite the reduction in attention currently given baggage by Customs, the 1954 records indicate that 60 percent of all interceptions of unauthorized plant material are taken from baggage. An effort was made to increase the plant quarantine participation in baggage inspection to offset to some degree the decreased Customs attention to this important channel of plant pest entry.

4. Leafhoppers from Fiji threaten Hawaii. For the third time since 1952, leafhoppers which are known vectors of the destructive Fiji disease of sugarcane have been found on planes from Fiji in large numbers. A strong aerosol treatment was promptly used to destroy these insects. Neither the leafhopper nor the Fiji disease of sugarcane are known to occur in Hawaii. The disease is so serious that it is feared if it should become established in Hawaii it would profoundly affect sugarcane production in those Islands.

5. Horseradish importations bring quarantine problem. Due to middlewest drought conditions, horseradish production was deficient in 1953 and numerous shipments were received from abroad. Of the 32,617 containers imported, over 20,000 were required to be fumigated. In addition, because many of the shipments came from countries in which the golden nematode is known to occur, it was necessary to inspect them carefully to determine freedom from contamination with this serious potato pest. Contaminated shipments were required to be processed or treated in the New York metropolitan area where the hazard of escape of the nematode would be negligible.

6. Insect and plant disease interceptions. During the year 10,358 insect interceptions and 5,546 interceptions of plant diseases were made from the 170,603 lots of interceptions of plant materials, or from the ships, planes, or other vehicles carrying them. These interceptions included such serious plant pests as citrus canker, golden and oat nematodes, Cancrosis "B" and black spot disease of citrus, giant African snail, citrus blackfly, horseradish and garlic weevils, Asiatic rice borer, Mediterranean and other fruit flies, beet leaf miner, and grape and olive moths.

7. Export certification increased. During the year 33,476 certificates, 12 1/2% more than in 1953, were issued to cover the export of nearly 12,000,000 containers of plants and plant products. The number of containers was 31.2% more than in 1953. Certificates were issued at 50 different ports for a wide variety of agricultural products consigned to 113 foreign countries. Service is available to enable exporters to meet the plant quarantine import requirements of the countries of destination.

8. Foreign quarantines changed. As the result of finding the golden nematode in Mexico in 1953, and additional findings in 1954, and due also to the reported occurrence of the potato wart disease in three locations in Mexico, the Potato Regulations were amended to prohibit the entry of potatoes from certain Mexican States which had heretofore been permitted to export potatoes to this country. A system of safeguards, similar to that in effect against pests of Puerto Rico, was inaugurated to protect the continental United States against pests of the Virgin Islands.

9. Foreign quarantine changes since July 1, 1954. Early in fiscal year 1955 refinements in the procedures for treating Hawaiian papayas, based on research developments, were authorized. These decrease the costs of treatment, both to the government for plant quarantine supervision and to the shipper for the treating operation.

ANIMAL DISEASE AND PEST CONTROL

Current Activities: Measures are devised to exclude from this country communicable diseases of foreign origin; to prevent the spread of diseases through interstate shipments of livestock or distribution of impure or impotent veterinary biologics; to control and eradicate livestock diseases; and to maintain, through a marketing agreement with manufacturers and handlers, adequate supplies of hog cholera virus and serum for protection of swine.

Selected Examples of Recent Progress:

Animal Disease Control and Eradication:

1. Eradicating Tuberculosis and Brucellosis:

 a. The incidence of tuberculosis in cattle during fiscal year 1954 was 0.11 percent, the same as fiscal year 1953; however there was a slight reduction in the percentage of carcasses found with tuberculosis (not including reactors) in Federally-inspected slaughtering establishments, as compared to previous years.

 b. Continued efforts have been made to trace to the herds of origin, animals that show lesions of tuberculosis in slaughtering departments of Federally-inspected plants. In the fiscal year 1953, 741 tuberculosis reactors were disclosed as a result of these tracings. During 1954, 1,613 reactors were uncovered as a result of testing herds from which lesion cases originated, or associated herds. Steps have been taken that are expected to increase still further the effectiveness of this phase of the project. During the first three months of the fiscal year 1955, 208

animals showing tuberculous lesions were reported by Federal inspectors at slaughtering plants. A total of 155 reactors were located by tracing the animals to their origin. In addition, two reports of hogs showing lesions have through the tracing procedure led to the location of 49 additional tuberculous reactors.

c. The use of the milk test as a screening device for locating brucellosis-infected herds reached its highest point to date during fiscal year 1954. There were 932,003 herds representing approximately 16,633,034 cattle tested by this method with 73.9 percent of the herds classified as negative. The milk test was used in 28 States and Puerto Rico. The test is used most extensively in the Midwest dairy area. This test is a means of rapid identification of infected herds and eliminates the slower, more expensive, individual animal blood test on a large portion of herds. Continued expansion of the test is expected.

d. The incidence of brucellosis in cattle under supervision was further reduced from 3.4 to 2.6% during the fiscal year 1954. Tests were conducted in 696,207 herds representing 9,002,109 cattle, disclosing 235,666 reactors. 80,672 reactors were held for gradual disposal for slaughter without payment of indemnity.

e. 334 counties are now listed as modified, certified, brucellosis-free areas, an increase of 22 over last year. North Carolina, New Hampshire, and Maine are the only States which are completely certified as brucellosis-free.

f. There was an 8 percent increase over fiscal year 1953 in the number of calf vaccinations with Strain 19 vaccine developed by the Department some years ago. 3,999,101 calves were officially vaccinated, bringing the total since the inauguration of this practice in 1941 to 21,346,623.

g. A project was undertaken in New York State to correlate and evaluate the results of extensive vaccinations in a large number of herds over a period of years. Results of this survey will increase knowledge of the value of calfhood vaccination as an adjunct to the eradication program. Results are now being compiled.

h. Comparison of funds provided by the Federal Government and cooperating States and counties for the eradication of brucellosis and tuberculosis for the fiscal year 1955 is as follows:

	Tuberculosis		Brucellosis	
	Federal Government	Cooperators	a/ Federal Government	b/ Cooperators
Operating funds	$1,750,700	$4,246,010	$10,839,131	$8,961,109
Indemnity payments .	325,000	1,051,829	5,635,569	1,368,978
Total	2,075,700	5,297,839	$16,474,700	10,330,087

a/ Includes $12,700,000 approved by the Secretary on January 7, 1955 for the accelerated program under the authorization contained in the Agricultural Act of 1954 for an accelerated program of not to exceed $15,000,000 annually for fiscal years 1955 and 1956.

b/ These contributions do not reflect the increased participation by the States due to the accelerated program. It is anticipated that in many cases increased funds will be made available through action by State legislatures when they have the opportunity to take action.

i. The attached tables show the average State and Federal indemnity payments and other data pertaining to the program for control and eradication of tuberculosis and brucellosis.

2. Eradicating Scabies:

a. Sheep Scabies campaign brings good results. An intensive scabies eradication campaign has continued in Louisiana and Mississippi. This all-out drive continues to bring increasingly good results but occasional scabby sheep are still being found.

During the year sheep scabies was reported as existing in 183 counties in 21 States, with a total of 391 flocks with 40,894 infected sheep located. 5,477,334 sheep were inspected for scabies, and 390,530 were dipped. This existing infection represents a serious threat. At the request of major sheep raisers associations as well as many individuals the Department is giving attention to a total eradication program.

b. Cattle Scabies outbreak controlled. An outbreak of psoroptic cattle scabies occurred in the Midwest and Southwest involving 14 counties in 6 States. However, this outbreak was quickly brought under control and all known infection eradicated. Efforts to locate any possible existing infection are continuing.

During the year cattle scabies was reported as existing in 38 counties in 14 States with a total of 64 herds comprising 10,749 cattle located. 1,090,260 cattle were inspected for scabies, and 32,844 were sprayed or dipped. During November 1954 the disease was noted in Illinois and Colorado. The outbreak was traced to the State of Colorado and prompt action was taken to eradicate known infection and keep exposed herds under surveillance.

3. Eradicating Cattle Fever Ticks:

a. Department and cooperative employees supervised 1,344,330 inspections or dippings in the United States under this program. In Puerto Rico where the tropical variety of fever tick is prevalent, it was necessary to include sheep and goats as well as cattle in the cattle fever tick eradication program. This required 516,387 inspections or dippings. Total inspections and dippings were 1,860,747 as compared with 4,372,799 for the fiscal year 1953.

SUMMARY OF BOVINE TUBERCULOSIS ERADICATION WORK
FISCAL YEAR 1954

State	Herds tested	Cattle tested	Infected premises	Reactors found	Percent reactors
Alabama	2,603	66,579	12	14	0.021
Arkansas	2,429	41,728	6	6	0.014
Arizona	1,948	34,698	3	12	0.035
California	19,017	688,583	183	676	0.099
Colorado	2,791	41,082	3	3	0.007
Connecticut	7,816	182,663	76	241	0.132
Delaware	2,097	49,780	35	56	0.112
Florida	3,279	127,212	13	80	0.063
Georgia	3,154	147,703	45	155	0.105
Idaho	794	18,781	0	0	0.0
Illinois	28,160	522,784	505	1,032	0.197
Indiana	32,151	553,289	517	878	0.159
Iowa	12,965	288,461	336	522	0.181
Kansas	14,443	273,327	96	156	0.057
Kentucky	2,076	38,032	18	44	0.116
Louisiana	2,790	165,929	125	416	0.251
Maine	5,984	66,253	7	15	0.023
Maryland	10,721	258,922	88	164	0.063
Massachusetts	10,629	196,647	55	156	0.079
Michigan	12,196	209,289	483	821	0.392
Minnesota	31,739	693,338	94	124	0.018
Mississippi	2,282	60,233	2	2	0.003
Missouri	12,622	227,437	66	104	0.046
Montana	802	15,899	0	0	0.0
Nebraska	4,707	91,685	48	80	0.087
Nevada	173	2,612	0	0	0.0
New Hampshire	7,252	110,675	3	3	0.003
New Jersey	11,497	241,569	151	242	0.10
New Mexico	1,697	22,412	5	5	0.022
New York	44,238	1,288,165	335	1,175	0.091
North Carolina	9,537	129,660	2	4	0.003
North Dakota	1,434	34,648	33	44	0.127
Ohio	27,890	461,189	319	564	0.122
Oklahoma	3,451	90,961	17	25	0.027
Oregon	21,473	196,680	32	56	0.028
Pennsylvania	36,153	610,252	290	978	0.16
Rhode Island	1,810	31,762	29	47	0.148
South Carolina	2,430	55,536	8	13	0.023
South Dakota	2,264	99,677	33	63	0.063
Tennessee	1,941	56,786	40	56	0.099
Texas	5,633	159,421	67	226	0.142
Utah	3,572	32,154	127	179	0.557
Vermont	6,818	196,925	31	202	0.103
Virginia	11,599	224,372	43	49	0.022
Washington	1,974	39,575	16	27	0.068
West Virginia	2,006	42,534	21	78	0.183
Wisconsin	35,374	901,490	236	881	0.098
Wyoming	3,042	30,052	11	11	0.037
Hawaii	423	23,916	15	34	0.142
Puerto Rico	5,098	91,050	24	167	0.183
Virgin Islands	1	258	0	0	0.0
Total	478,975	10,234,665	4,704	10,886	0.11

SUMMARY OF BOVINE BRUCELLOSIS ERADICATION IN COOPERATION WITH STATES, FOR FISCAL YEAR 1954

State or Territory	Brucellosis blood tests and Calfhood vaccinations						Brucellosis Ring tests		
			Reactors						
	Herds tested	Cattle tested	Number found	Percent	Reactors held	Calves vaccinated	Herds tested	Positive herds	Estimated cattle represented
Alabama	3,593	63,114	2,067	3.3	502	56,591	0	0	0
Arkansas	3,885	33,657	2,543	7.6	986	89,982	0	0	0
Arizona	3,428	25,976	693	2.7	224	11,715	0	0	0
California	0	0	0	0.0	0	367,303	0	0	0
Colorado	16,668	129,657	4,008	3.1	2,191	102,336	2,327	484	40,070
Connecticut	3,919	74,010	1,152	1.6	1,123	23,188	0	0	0
Delaware	2,403	42,668	810	1.9	5	7,419	2,630	1,637	61,033
Florida	7,271	88,353	1,547	1.8	374	31,543	1,478	289	73,239
Georgia	8,684	178,277	9,538	5.4	289	19,092	114	49	2,052
Idaho	4,840	56,309	1,867	3.3	168	124,829	3,377	1,024	46,095
Illinois	68,235	521,150	13,166	2.5	7,706	171,489	63,087	19,699	1,250,098
Indiana	33,021	281,600	10,626	3.8	6,754	50,665	60,497	16,637	907,455
Iowa	33,644	273,036	16,739	6.1	0	154,693	44,839	14,664	585,614
Kansas	17,055	103,992	3,316	3.2	0	62,095	0	0	0
Kentucky	5,192	53,513	1,910	3.6	823	59,397	0	0	0
Louisiana	8,991	84,920	8,785	10.3	4,673	72,618	1,139	909	36,685
Maine	7,481	101,280	972	1.0	41	9,529	10,700	449	194,891
Maryland	7,118	174,474	4,960	2.8	1,887	47,560	0	0	0
Massachusetts	773	27,269	391	1.4	390	17,876	125	105	3,494
Michigan	10,251	150,191	5,897	3.9	256	21,182	36,970	6,122	369,700
Minnesota	72,587	1,357,209	30,817	2.3	3,262	138,703	184,413	32,160	3,319,434
Mississippi	5,878	73,544	3,572	4.9	219	104,491	0	0	0
Missouri	17,540	133,776	7,200	5.4	1,618	82,065	45,828	21,015	638,145
Montana	10,914	255,512	4,970	1.9	4,970	205,270	2,916	238	24,829
Nebraska	11,347	107,628	3,934	3.7	516	80,302	14,820	3,494	182,505
Nevada	707	10,509	321	3.1	213	42,405	0	0	0
New Hampshire	8,777	106,382	293	0.3	0	13,303	0	0	0
New Jersey	8,163	149,550	1,832	1.2	759	21,879	369	130	14,129

SUMMARY OF BOVINE BRUCELLOSIS ERADICATION IN COOPERATION WITH STATES, FOR FISCAL YEAR 1954--Continued

State or Territory	Brucellosis blood tests and Calfhood vaccinations						Brucellosis Ring tests		
			Reactors						
	Herds tested	Cattle tested	Number found	Per-cent	Reactors held	Calves vacci-nated	Herds tested	Posi-tive herds	Estimated cattle represented
New Mexico	4,008	39,843	208	0.5	30	15,568	0	0	0
New York	31,906	559,428	10,606	1.9	10,606	298,531	1,104	453	24,213
North Carolina	29,105	287,759	1,542	0.5	0	1,504	0	0	0
North Dakota	18,979	412,275	6,834	1.7	881	38,897	15,231	400	151,701
Ohio	32,234	253,121	8,669	3.4	2,273	72,278	57,252	10,388	701,710
Oklahoma	6,964	75,614	3,239	4.3	0	50,123	0	0	0
Oregon	29,840	296,179	1,980	0.7	0	72,148	2,075	652	22,640
Pennsylvania	47,063	719,766	7,622	1.1	925	148,290	26,853	1,234	337,951
Rhode Island	322	8,566	62	0.7	61	2,832	0	0	0
South Carolina	6,770	101,049	1,079	1.1	57	8,772	1	0	30
South Dakota	982	12,775	1,228	9.6	806	147,708	32,987	9,915	494,805
Tennessee	1,618	36,214	785	2.2	174	115,136	0	0	0
Texas	16,178	85,957	3,907	4.5	0	35,108	0	0	0
Utah	4,684	41,672	1,563	3.8	1,563	23,659	10,417	1,508	116,087
Vermont	3,660	68,915	1,251	1.8	1,251	66,492	0	0	0
Virginia	11,668	230,326	6,530	2.8	204	73,524	0	0	0
Washington	16,913	221,090	3,636	1.6	432	80,025	20,889	5,437	313,335
West Virginia	6,207	105,331	1,121	1.1	2	7,610	1,071	126	13,857
Wisconsin	35,751	703,943	28,377	4.0	21,094	485,092	285,791	93,035	6,668,791
Wyoming	3,017	31,834	833	2.6	0	55,887	2,453	611	24,530
Puerto Rico	5,972	52,636	668	1.3	364	10,397	250	50	13,916
Virgin Islands	1	260	0	0.0	0	0	0	0	0
Total	696,207	9,002,109	235,666	2.6	80,672	3,999,101	932,003	242,914	16,633,034

STATEMENT OF COMPARATIVE TESTING, HERDS AND CATTLE UNDER SUPERVISION, MODIFIED ACCREDITED AREAS, AVERAGE APPRAISAL, SALVAGE, AND STATE AND FEDERAL INDEMNITY IN TUBERCULOSIS ERADICATION WORK FISCAL YEAR 1935 TO 1954 INCLUSIVE

Fiscal Year	Tests Conducted		Reactors found	Percent infection	Under Supervision		Modified accredited areas*	Average during year			
	Herds	Cattle			Herds	Cattle		Appraisal	Salvage	State indemnity	Federal Indemnity
1935	2,378,668	25,237,532	376,623	1.5	6,590,863	48,768,627	2,428	$57.55	$15.19	$15.87	$18.70
1936	1,944,624	22,918,038	165,496	.7	6,515,273	59,907,935	2,921	77.66	26.50	10.18	22.44
1937	961,109	13,750,308	94,104	.7	6,745.471	61,640,711	3,030	86.04	28.94	12.20	22.72
1938	1,007,586	14,108,871	89,359	.6	6,471,538	62,640,358	3,124	86.76	32.16	16.41	18.12
1939	750,806	11,186,805	60,338	.5	6,372,720	60,439,030	3,142	89.01	34.49	18.96	15.97
1940	819,408	12,222,318	56,343	.46	6,191,330	61,570,426	3,148	91.05	37.12	20.44	16.20
1941	777,435	12,229,499	40,702	.3	6,235,198	62,696,167	3,151	96.50	40.99	20.95	16.48
1942	681,504	10,983,086	28,008	.26	6,320,006	63,073,213	3,151	109.69	50.35	21.49	16.55
1943	563,413	9,308,936	17,167	.18	6,317,670	63,846,496	3,151	135.19	65.03	27.50	18.75
1944	524,927	8,894,466	18,338	.2	6,153,069	64,519,652	3,151	154.53	59.93	36.07	21.72
1945	484,749	8,105,480	19,534	.24	6,120,528	64,790,921	3,151	161.32	59.78	40.31	22.71
1946	505,296	8,454,463	19,464	.23	6,035,783	65,981,099	3,150**	174.20	69.00	37.26	23.89
1947	515,517	8,312,919	16,666	.2	6,082,666	65,577,421	3,150	199.46	83.55	40.81	24.19
1948	523,924	8,294,423	15,943	.19	6,044,170	66,246,215	3,150	234.60	119.74	38.53	23.90
1949	536,162	8,737,501	17,007	.19	5,985,215	65,419,332	3,150	285.78	139.46	37.68	24.72
1950	539,799	9,439,811	17,733	.19	5,991,703	65,443,353	3,150	272.87	123.24	43.40	25.05
1951	503,933	8,847,228	12,353	.14	5,808,062	64,824,960	3,149***	323.70	174.64	43.59	24.92
1952	488,769	9,164,265	10,351	.11	5,798,865	64,791,861	3,149	346.13	174.05	46.15	25.66
1953	463,159	9,675,245	10,811	.11	5,688,183	67,423,940	3,149	309.47	117.31	49.22	26.12
1954	**478,975**	**10,234,665**	**10,886**	**.11**	**5,681,947**	**67,937,276**	**3,149**	**250.92**	**82.18**	**43.76**	**26.60**

* Includes Puerto Rico and the Virgin Islands.
** Reduction is due to consolidation of two counties.
*** Reduction is due to fact no cattle under supervision in District of Columbia.

STATEMENT OF COMPARATIVE TESTING, HERDS AND CATTLE UNDER SUPERVISION, AVERAGE APPRAISAL, SALVAGE, AND STATE AND FEDERAL INDEMNITY IN BRUCELLOSIS ERADICATION WORK
FISCAL YEAR 1935 TO 1954 INCLUSIVE

Fiscal Year	Tests Conducted		Reactors found	Reactors held	Percent infection	Under Supervision		Average during year				
	Herds	Cattle				Herds	Cattle	Appraisal	Salvage	States Paying Indemnity	State 1/ Indemnity	Federal Indemnity
1935	212,482	3,317,760	381,010	- -	11.5	187,109	2,936,347	$56.86	$19.87	1	$ 27.99	$ 24.29
1936	470,788	6,674,709	457,104	- -	6.8	449,644	5,780,418	70.65	27.44	2	20.57	26.86
1937	630,917	8,021,167	397,864	- -	5.0	719,452	7,877,612	70.67	27.94	5	19.25	26.45
1938	671,310	7,837,443	324,532	- -	4.1	1,035,454	9,447,137	80.37	32.07	10	20.36	26.69
1939	724,613	7,591,398	219,165	- -	2.9	1,372,410	11,111,643	97.17	33.97	28	26.09	20.00
1940	590,393	6,937,428	171,953	- -	2.5	1,615,755	12,315,329	90.85	34.99	36	17.12	14.96
1941	677,544	7,465,254	182,075	- -	2.4	1,883,914	13,932,693	93.28	37.68	40	17.19	15.19
1942	591,835	6,891,219	209,238	39,586	3.0	2,105,294	15,627,027	99.19	52.06	41	17.71	15.83
1943	392,636	5,185,228	197,329	53,558	3.8	2,199,535	16,616,522	128.03	64.87	40	18.63	16.77
1944	386,266	5,235,912	226,079	75,499	4.3	2,254,235	17,326,138	143.34	59.75	40	22.54	19.30
1945	395,236	5,213,458	243,050	86,738	4.7	2,307,585	17,545,638	139.35	56.63	40	22.14	19.25
1946	389,814	4,876,866	245,786	74,922	5.0	2,360,699	17,870,154	149.65	68.64	40	22.07	19.34
1947	454,789	5,133,814	232,293	68,977	4.5	2,249,118	17,589,018	178.25	82.93	40	23.44	20.64
1948	533,936	5,434,792	232,199	68,653	4.3	2,291,760	18,128,318	203.98	107.38	39	24.44	21.17
1949	563,501	5,671,347	226,691	66,351	4.0	2,165,364	17,126,480	256.46	132.11	37	25.67	23.41
1950	618,801	5,974,721	208,298	60,686	3.5	2,299,556	18,527,624	237.68	114.21	31	25.16	22.75
1951	565,155	5,640,836	172,322	60,418	3.1	2,324,621	19,197,790	326.85	189.45	22	23.47	21.41
1952	670,738	7,491,327	314,260	179,101	4.2	2,149,078	21,496,113	334.68	189.39	25	26.03	24.05
1953	660,344	7,860,870	268,348	149,628	3.4	2,102,545	21,607,676	276.52	122.52	25	25.59	22.32
1954	696,207	9,002,109	235,666	80,672	2.6	2,298,284	24,572,013	190.90	89.18	26	20.64	11.71

1/ Beginning May 1, 1939, Federal indemnity payment limited to not exceed total amount paid by cooperating State agencies. Includes Puerto Rico.

Note: Federal indemnity was not paid for reactors held in calfhood vaccinated herds.

b. Dippings and inspections were continued in Florida at auction markets and in areas where recent reinfestations were previously found, but no cattle fever ticks, the only natural carrier of the disease, tick fever, were found. Due to Florida's close proximity to the tick-infested islands and countries of the West Indies with which there is extensive commerce, there is always danger of reinfestation.

c. In Texas, a narrow buffer area on the American side of the border was constantly inspected by experienced Department employees to prevent the introduction and dissemination of tick fever. All territory in Mexico adjacent to the boundary along the lower Rio Grande is tick-infested. A severe drought caused a critical situation along the border. Many sources of water dried, including extended sections of the Rio Grande from Laredo to the Gulf. Mexican livestock drifted into Texas in increasing numbers. In addition, in the latter part of the fiscal year a severe flood occurred in this area which washed out many miles of existing fence along the American side of the river. Until the owners repair and rebuild the washed-out sections of fence, the danger that tick-infested animals will stray across from Mexico is greatly increased. The buffer area is being constantly reinfected by Mexican animals. Employees are on the alert to see that those animals that do become infected are contained within the quarantined area. With the opening of the border on December 31, 1954, it may be necessary to increase the force of regular tick inspectors in this area.

4. Diagnosis, Control and Eradication of Miscellaneous Diseases:

a. In the Corn Belt area new modified live hog cholera virus vaccines are now being put into wide use. They are still on a field-trial basis and require close observation. Close watch is still being maintained to detect any reappearance of the variant hog cholera virus.

b. Swine erysipelas vaccinations. Federal employees cooperated with State officials, swine growers, and others in the vaccination of swine against this disease. Some 63,917 herds and 4,545,462 swine received the first injection of the serum-culture immunization and 384 herds and 21,541 swine also received second injections of this product.

c. Blue tongue of sheep is becoming an increasingly serious problem in this country. The disease has been reported in Arizona, California, Colorado, New Mexico, Texas and Utah, and probably has been present in other areas. The Department has cooperated with State officials, sheep owners, and others in the diagnosis of the disease and with biological houses in the production, testing, and field use of a vaccine for the prevention of blue tongue. This vaccine is now available and is presently being used in the field. During the summer and fall of 1954, blue

tongue of sheep was reported in Arizona, California, Colorado, Kansas, Missouri, Nebraska, New Mexico, Oklahoma, Texas, and Utah. In order to augment existing diagnostic facilities, limited for the most part to California, the Department has established a diagnostic laboratory in Denver, Colorado, for this purpose.

d. Scrapie of sheep. Scrapie, a chronic neurosis of sheep, has been diagnosed in the States of California, Connecticut, Illinois, Michigan, New York, Ohio, Oregon and Indiana. Eradication of this disease by destruction of infected and exposed animals and by inspecting flocks which have been associated with these animals is being carried out. Approximately 700 flocks in 39 States are under surveillance due to their association with scrapie-infected or exposed sheep. Meetings with research workers, sanitary officials, and members of the industry were held to further develop the eradication program, and information pertaining to the disease was gathered from available sources and disseminated to employees and members of the industry.

Eradication of scrapie in sheep. In 1954 scrapie was diagnosed on an additional premise in Ohio, on two premises in New York, and on one premise each in the States of Connecticut, Oregon, and Indiana.

All flocks known to have been infected with scrapie have been eradicated. Inspections on over 700 flocks associated with the diseased or exposed animals have failed to disclose further spread of the disease. The Secretary, therefore, on December 17, 1954 declared the emergency, arising out of the finding of the outbreak of this disease, at an end. Existing regulations have been amended to allow payment of Federal indemnity for scrapie infection without participation in such payments by the States. Federal payments are now made from regularly appropriated rather than emergency funds. Indemnities for the 1954 fiscal year amounted to 3,943.

e. Dourine and glanders of horses. Eight cases of dourine were found, largely on the Papago Indian Reservation in southern Arizona in 1,981 samples of equine sera submitted from that State. The work on the Indian reservation was carried out by specific agreement with the Bureau of Indian Affairs, Department of the Interior, and each agency shared in the cost. Samples submitted from other States were negative to the complement-fixation test for dourine. Three cases of glanders were found in Arizona during the summer and fall of 1954. This disease is very prevalent in adjacent Mexico and will be a constant threat to the United States. Seventy-two dourine reactors were found among equines tested at various ports of entry along the Mexico-United States border. The United States had been free of this disease for a number of years.

f. Anthrax. During the year 233 outbreaks of anthrax were reported in 121 counties in 26 States where 409 cattle, 127 swine, 51 sheep, 10 equines, and 86 mink died of this disease. During the year preventive treatment against anthrax was given to 6,459 Indian-owned cattle on 5 reservations in South Dakota. During the late summer months of 1954, a severe outbreak of anthrax occurred in southern Louisiana and Mississippi, killing 1,000 cattle and 297 horses. Prompt action to assist in bringing the outbreak under control was taken by State and Federal cooperating authorities. Department representatives made a study of the outbreak in cooperation with the States.

g. Miscellaneous diseases. During the late summer of 1954 reports of the disease called "psitacosis" was reported among workers in turkey slaughtering establishments. Representatives of the Department met with officials of the U.S. Public Health Service and public health and livestock sanitary officials in several places to make plans and map out procedures for the effective control of these outbreaks. The Department has indicated its willingness to cooperate with any state in making field studies of this disease.

There was a serious outbreak of mucosal disease of cattle in the midwest States. In cooperation with the States plans have been made for further study of the disease and how it can best be dealt with.

As an adjunct to the service now available for diagnosis of foot-and-mouth disease and other exotic diseases, the Department is making studies to determine the extent of facilities and personnel available for the diagnosis of exotic poultry diseases. Many reports of conditions simulating foot-and-mouth disease were investigated but proved not to be that disease. All cases of animal and poultry diseases suspected as being of foreign origin were promptly investigated to insure prompt detection and appropriate protective measures.

h. Leptospirosis, a serious disease of cattle, swine, and other domestic animals, which is fatal to humans as well as animals, is causing serious concern especially in the northwestern states where it is now most prevalent. The Department has cooperated with state agencies in that area in field studies and in diagnostic activities. The Department is now in the process of establishing in cooperation with the States, a survey for the purpose of determining the incidence of this disease.

5. Supervision over Interstate Movement of Livestock:

a. Inspection of livestock for communicable diseases at public stockyards. Valuable assistance was rendered during the past fiscal year in preventing the spread of vesicular exanthema of swine and in tracing outbreaks to source of origin.

b. Volume of work during the fiscal year 1954 is reflected in the following table:

	Fiscal Year 1953	Fiscal Year 1954
Inspection at public stockyards		
Number of stockyards operating	46	46
Number of cities in which located	44	44
Animals inspected:		
Cattle	23,417,701	25,810,912
Sheep	13,643,449	13,179,281
Swine	28,018,094	23,182,295
Total animals inspected	65,079,244	62,172,488
Animals dipped and immunized:		
Cattle dipped	499	13,019
Sheep dipped	364,675	241,689
Swine immunized	222,078	131,108
Total animals dipped and immunized	587,252	385,816
Health certificates issued for shipments	274,047	221,006
Infectious cars received	19,055	1,295
Cars cleaned and disinfected	22,570	28,122
Trucks cleaned and disinfected	16,683	24,515
Diseased animals received (includes in fiscal year 1954- 5,215 tuberculosis, 91,915 brucellosis and 48 paratuberculosis reactors)	89,174	106,918
Three more stockyards will be placed under Federal inspection during the fiscal year 1955. This will result in a considerable numerical increase in each of the above items. In addition, the rapid expansion of the brucellosis eradication program will increase considerably the number of diseased animals handled through the yards during the fiscal years 1955 and 1956.		
Enforcement of Animal Quarantine Acts		
Violations investigated	120	274
Violations referred to the Solicitor of the Department	16	61

An additional 35 reported violations under investigation at the beginning of the year made a total of 309 reports to be handled. Of these, there was insufficient evidence in 192 cases to warrant prosecution and they were filed without action. Fifty-six cases were being investigated at the close of the year. Disposition was made by the courts during this period of two cases and fines of $200 and costs were imposed. The strict enforcement of the Federal quarantine imposed because of the existence of vesicular exanthema in certain areas has greatly increased the number of violations reported on illegal interstate movement of animals.

c. Enforcement of the 28-Hour Law. During the year 251 reports of alleged violations of the 28-Hour Law were received. An additional 30 reported violations under investigation at the beginning of the year made a total of 281 reports to be handled. One hundred forty-eight cases were recommended to the Solicitor of the Department for prosecution. Of those remaining, 105 cases were filed without action because of circumstances or conditions that were considered as excusing the carrier for its failure to comply with the requirements. At the end of the year 28 cases were under investigation. Reports showed penalties of $12,700 and costs were imposed by the courts on 112 violations.

Animal Inspection and Quarantine:

a. Inspection and quarantine of import animals and poultry. In accordance with the regulations of the Department, all horses, ruminants, swine, and poultry offered for importation into the United States were carefully inspected at coastal, air, and border ports of entry.

The Bureau of Customs of the Department of the Treasury and the Public Health Service of the Department of Health, Education and Welfare continued their valuable assistance in the administration of these import regulations. Public Health Service officials at ocean ports obtained for the Branch 25,224 declarations from masters of ships certifying to the absence or presence of prohibited animals, or meats therefrom, aboard their vessels.

Animals, Including Poultry, Inspected and Passed for Entry, Fiscal Year 1954:

Kind of Animal	Canadian border ports	Mexican border ports	Ocean ports	Total	Refused entry
Cattle	99,432	- -	285	99,717	523
Swine	12,512	- -	837	13,349	397
Sheep	2,292	- -	542	2,834	5
Goats	21	- -	1,753	1,774	2
Equine	19,014	23,001	539	42,554	416
Poultry	8,325	- -	4,964	13,289	394
Other animals	110	- -	110	220	5
Eggs	100	- -	200	300	- -
Total	141,806	23,001	9,230	174,037	1,742

b. Certification of purity of breeding and identity of animals offered for free entry. Under the provisions of Paragraph 1606 of the Tariff Act of 1930, certificates as to the purity of breeding were issued for 18,993 animals imported during fiscal year 1954. The purebred animals certified for entry free of duty were by classes and breeds, as follows:

Horses	297
Cattle	16,536
Sheep	905
Swine	568
Goats	1
Dogs	684
Cats	2
Total	18,993

c. Sanitary control of imported animal products and forage. Sanitary control was maintained over the entry of various animal products, and hay and straw. Products permitted entry under restrictions designed to prevent the introduction into the United States of foot-and-mouth disease, rinderpest, anthrax, or other infectious diseases of animals and poultry, were transported from the port of entry under seal to approved destination establishments and there handled under supervision.

The large volume of animal products imported during fiscal year 1954 included 63,748,255 hides and skins, of which 1,550,362 were permitted entry subject to restrictions; over 407 million pounds of wool; and more than 46,500 tons of certified animal casings; and 449,301 pounds of animal casings released after disinfection.

Railroad cars, trucks, and premises involved in the transportation and handling of restricted products were disinfected.

Particular attention was given to preventing the landing of fresh, chilled, or frozen meats, or garbage derived therefrom, or from air and ocean transports, provisioned in countries where foot-and-mouth disease exists. During the year over 28,000 ocean vessels and 49,000 airplanes arrived in foreign commerce. Without constant surveillance, officials in charge of such transports may unload garbage containing bones and scraps of meat originating in countries where foot-and-mouth disease exists.

Unsterilized hay and straw used as packing material from countries where foot-and-mouth disease or rinderpest exists were destroyed.

d. Inspection of export animals and transporting vessels. The law requires that domestic ruminants and swine intended for export be free from disease, and that vessels on which they are to be transported be equipped to insure their safe and humane handling. Animals are inspected and tested in various districts of origin throughout the United States and supervision is given to livestock facilities and other accommodations on ocean vessels and aircraft. In the 1954 fiscal year, a total of 48,205 animals, compared with 40,101 in 1953, were inspected and tested for export as follows:

Kind of Animal	Destination			
	Canada	Mexico	Countries	Total
Cattle	1,367	3,510	8,063	12,940
Swine	- -	262	897	1,159
Sheep	197	21,061	825	22,083
Goats	17	9,740	84	9,841
Equines	47	822	1,313	2,182
Total	1,628	35,395	11,182	48,205

e. Control of manufacture, importation, shipment and marketing of viruses, serums, toxins, etc.

Outstanding licenses under the Virus-Serum-Toxin Act permitted the production of 113 different biological products as of June 30, 1954. Several products are manufactured in more than one form so that the total number of different biological products was 192.

The progress and anticipated extent of the work is reflected in the following table:

	Actual F.Y. 1954	Estimated F.Y. 1955	Estimated F.Y. 1956
Establishments producting anti-hog-cholera serum and hog-cholera virus	30	29	28
Production (cc):			
Serum (completed product)	854,413,500	794,605,050	736,929,000
Virus:			
Simultaneous	40,431,625	37,601,400	35,345,000
Hyperimmunizing	164,843,195	153,304,170	144,106,000
Inoculating	749,950	697,455	655,608
Animal inspections	2,321,987	2,159,450	2,030,000
Tests supervised	8,420	7,830	7,361
Establishments producing hog-cholera vaccine	17	17	17
Production (doses)	31,636,155	32,500,000	34,450,000
Establishments producing other biologics	46	48	50
Production:			
CC	564,476,815	592,700,655	622,335,000
Milligrams	193,685,364	203,379,630	213,547,000
Units	384,380,788	392,068,493	401,671,000

	Actual F. Y. 1954	Estimated F.Y. 1955	Estimated F.Y. 1956
Products destroyed (all kinds):			
CC	44,582,013	46,811,110	49,151,000
Milligrams	43,546,704	45,724,000	48,010,000
Units	6,356,600	6,483,752	6,807,000
Export certificates issued	1,020	1,100	1,200

The value of present controls over hog cholera products was clearly demonstrated again in the past year when clinical examination of swine showed evidence of vesicular exanthema.

3,581 samples of biological products and sub-cultures of organisms were collected and forwarded to Washington laboratories for testing. Included in these were 2,231 samples of Brucella abortus vaccine, of which 5.3 percent were found unsatisfactory when examined in these laboratories. These unsatisfactory batches of Brucella abortus vaccine were destroyed under Federal supervision and represented 1,704,045 cc. or enough vaccine to treat 340,809 calves. In the course of 1,186 purity and safety tests on hog-cholera virus, approximately 8.7 percent of the batches tested were suspected of containing the swine-erysipelas organism. When subjected to laboratory examination, approximately 7.6 percent were found to contain the erysipelas organism and the virus was destroyed under the supervision of a Federal inspector.

The following table shows the volume of biological products certified for export:

Products *	F.Y. 1953	F.Y. 1954	Estimated F.Y. 1955	Estimated F.Y.1956
Anti-hog-cholera serum (cc)	20,535,000	26,779,000	23,880,000	26,000,000
Other serums	79,000	232,000	239,000	244,000
Hog-cholera virus (cc)	829,000	1,005,000	1,025,000	1,000,000
Aggressins	8,000	2,000	1,500	1,000
Antitoxins (units)	5,078,000	6,737,000	7,500,000	8,100,000
Bacterins	3,506,000	4,976,000	5,275,000	5,780,000
Diagnostics	351,000	236,000	240,000	235,000
Vaccines	4,995,000	6,939,000	7,490,000	8,650,000

*Doses unless otherwise indicated.

The following table shows comparable figures by fiscal years of the number of handlers operating under the Marketing Agreement and Order:

	Actual		Estimated	
	1953	1954	1955	1956
Producer-handlers	30	28	28	27
Distributor-handlers or equivalent, including wholesale purchasers and handlers	225	203	203	203

Control agency: Following a uniform method for the determination of minimum qualifications for wholesalers, handlers were screened to ascertain whether they were properly classified under the Order and numerous changes in classification were initiated. Since the advent of the modified live virus hog-cholera vaccines appears to have affected the orderly marketing of anti-hog-cholera serum and hog-cholera virus, the Control Agency petitioned the Secretary for a hearing relating to proposed amendments to the Marketing Agreement and Order. This hearing was held in Kansas City, Missouri, July 21 and 22, 1954. As a result, a notice was filed recommending that all hog cholera vaccines be included within the Marketing Agreement and Order. Each handler is being given an opportunity to sign the proposed amendments.

During the year investigations were instituted in the case of three handlers at the request of the Control Agency. Two of the investigations have been completed and the cases referred to the appropriate agency for disposition. As of May 1, 1954, thirteen handlers were found to be in violation of the requirements of the Order that each must have available a supply of serum equivalent to 40% of his previous year's sales. These cases have been referred to the Office of Solicitor for appropriate action.

MEAT INSPECTION

Current activities: Federal meat inspection assures clean and wholesome meat for human consumption. The work consists of inspection of animals and of carcasses at the time of slaughter; inspection at all stages of preparation of meat and meat-food products to assure sanitary handling; destruction of condemned product to prevent its use for human food; enforcement of measures that insure informative labeling; inspection of meat and meat-food products offered for importation; and a system of certification to assure acceptance of domestic meats in foreign trade. Meat and meat-food products are examined for compliance with specifications of governmental purchasing agencies for which reimbursements are received. Reimbursements are also received from meat packing establishments for the cost of overtime work performed at their present. Continuous inspection of the manufacture of processed butter is also provided under this activity.

Selected Examples of Recent Progress:

1. The scope of operations under the meat inspection laws is indicated by the following tables:

Meat Inspection Activities

	At Close of Fiscal Years			Estimated	
	1952	1953	1954	1955	1956
Number of establishments covered	965	991	1,067	1,103	1,127
Number of cities and towns in which establishments were located	381	390	410	425	440
Antemortem inspection:	Fiscal Year				
Animals passed	92,460,187	92,365,921	90,733,945	92,944,000	93,999,000
Animals suspected	286,615	224,962	188,306	190,000	190,000
Animals condemned	9,448	7,810	6,181	6,000	6,000
Total animals inspected	92,756,250	92,598,693	90,928,932	93,140,000	94,195,000
Postmortem inspection:					
Carcasses passed	92,361,681	92,302,113	90,640,616	92,354,000	93,909,000
Carcasses condemned	383,287	288,624	281,974	230,000	280,000
Total carcasses inspected	92,744,968	92,590,737	90,922,590	93,134,000	94,189,000
Inspection of animals by species:					
Antemortem inspection (animals)					
Cattle	12,183,042	15,208,023	18,479,229	18,600,000	18,500,000
Calves	4,308,303	6,027,449	7,480,146	7,540,000	7,500,000
Sheep and lambs	11,219,553	13,623,394	14,368,902	13,700,000	13,400,000
Goats	28,868	22,803	53,094	70,000	70,000
*Horses	322,083	321,545	250,295	230,000	225,000
Swine	64,194,401	57,395,479	50,297,266	53,000,000	54,500,000
Total	92,756,250	92,598,693	90,928,932	93,140,000	94,195,000

	Fiscal Year				
	1952	1953	1954	1955	1956
Inspection of animals by species: (Cont'd)					
Postmortem inspections (carcasses)					
Cattle	12,179,375	15,204,998	18,475,936	18,597,000	18,497,000
Calves	4,807,524	6,026,786	7,479,329	7,539,200	7,499,200
Sheep and lambs	11,218,394	13,622,745	14,368,314	13,699,500	13,399,500
Goats	28,363	22,803	53,093	69,997	69,997
*Horses	322,064	321,519	250,282	229,985	224,985
Swine	64,188,748	57,391,886	50,295,636	52,998,318	54,498,318
Total	92,744,968	92,590,737	90,922,590	93,134,000	94,189,000

*Horses are slaughtered and their meat is identified as such. It is handled and prepared in separate establishments from those handling cattle, calves, sheep, swine, and goats.

Meat and Meat Food Products Prepared and Processed Under Federal Inspection by Fiscal Years

Fiscal Year	Pounds
1952	16,682,367,940
1953	15,976,408,330
1954	14,833,471,229
1955 (Est.)	16,000,000,000

Meat and Meat Food Products Classified by Type of Product

	Fiscal Year 1952 (Pounds)	Fiscal Year 1953 (Pounds)	Fiscal Year 1954 (Pounds)
Placed in cure:			
Beef	111,782,159	119,620,712	136,094,809
Pork	3,691,167,274	3,505,135,890	3,093,765,867
Other	1,651,813	1,461,761	2,203,569
Smoked and/or dried:			
Beef	59,039,444	49,781,137	56,013,138
Pork	2,478,528,992	2,427,698,106	2,139,975,927
Cooked meat:			
Beef	59,584,879	66,642,332	66,032,830
Pork	426,662,363	315,865,497	263,174,996
Other	2,533,295	3,517,822	3,091,667
Sausage:			
Fresh finished	219,410,677	212,385,044	201,932,522
To be dried or semidried	113,810,026	126,065,241	126,633,460
Frankfurters, weiners	508,459,941	541,517,541	555,346,197
Other	563,155,848	616,045,275	615,002,760
Loaf, headchese, chili con carne, jellied products, etc.	192,054,839	198,602,990	196,715,686
Steaks, chops, roasts	938,097,090	659,777,173	633,492,264
Bouillon cube extract	3,330,752	3,419,120	3,152,777
Bacon, sliced	801,985,640	792,788,643	713,408,005
Sliced, other	35,914,675	61,042,926	88,967,894
Hamburger	136,317,238	132,593,483	188,859,297
Miscellaneous meat products	40,233,744	30,201,281	39,592,579
Lard:			
Rendered	2,201,896,997	1,914,783,487	1,589,966,136
Refined	1,582,503,639	1,400,872,257	1,250,946,222
Oleo stock	89,383,330	113,398,738	112,922,272
Edible tallow	67,574,315	89,914,906	138,296,143
Rendered pork fat:			
Rendered	110,938,640	102,169,035	89,873,300
Refined	59,776,070	68,749,703	55,355,299
Compound containing animal fat	283,739,747	334,887,149	398,489,120
Oleomargarine containing animal fat	20,250,351	30,058,009	31,260,209
Canned products	1,812,966,224	1,986,742,487	1,988,303,143
Horse meat products:			
Cured	5,573,313	6,918,747	6,419,028
Chopped	45,273,161	42,484,934	26,658,687
Edible oil	4,192,173	3,220,804	2,370,053
Canned horse meat	14,579,291	18,046,100	19,155,373
Total	16,682,367,940	15,976,408,330	14,833,471,229

Examination of Meat and Meat Food Products for Other Government Agencies (Reimbursable)

Branch of Government	Fiscal Year 1952 (Pounds)	Fiscal Year 1953 (Pounds)	Fiscal Year 1954 (Pounds)	(Estimated) Fiscal Year 1955 (Pounds)
Department of the Army	- -	- -	- -	264,000,000
Department of the Navy	393,494,290	396,939,206	352,549,957	330,000,000
Commodity Credit Corporation (supply programs)	- -	- -	76,426	8,000,000
Coast Guard	251,740	254,493	79,361	80,000
Marine Corps	141,216	164,224	92,578	90,000
Department of Interior	36,257	- -	- -	- -
Veterans Administration	3,660,921	3,844,338	2,764,098	5,400,000
Department of the Army(Engineers)	59,667	- -	- -	- -
Maritime Commission	1,281	- -	- -	- -
Department of Justice	96,724	59,648	52,964	60,000
Department of Commerce	66,390	43,834	27,640	25,000
Federal Security Agency	15,909	36,717	41,634	50,000
All others	- -	992,413	- -	- -
Total	397,824,395 1/	402,334,873 2/	355,684,708 3/	607,705,000

1/ Includes 4,137,569 pounds rejected.
2/ Includes 6,123,560 pounds rejected.
3/ Includes 6,163,807 pounds rejected.

Summary of Samples Examined in Laboratories for Determination of Adulteration or other Objectionable Conditions, Fiscal Year 1954

	Number Examined	Reported Adversely
Meat and meat food products	8,189	1,223
Edible fats and oils	388	22
Binders (cereal, dried skim milk, soya flour)	639	14
Seasonings (spices, flavorings)	3,253	58
Curing materials	1,040	35
Miscellaneous	4,478	124
Samples of animal foods	101	15
Imports	1,867	86
	19,955	1,577

Examination of Labels and Sketches, Fiscal Year 1954

	Fiscal Year 1954
Number of labels and sketches approved	31,340
Number of labels approved for imported meat	1,000
Number of labels and sketches refused approval	2,158
Total number of labels and sketches reviewed	34,498

Inspection of Imported Meat and Meat Food Products

Fiscal Year	Pounds
1952	339,589,208
1953	367,945,231
1954	334,326,990
1955 (Est.)	301,000,000

2. During the past year veterinary meat inspectors obtained laboratory confirmation on 1,156 specimens of diseased tissue in connection with examinations and diagnoses made by them at Federally-inspected establishments. The laboratory work on these specimens involved histopathological studies and frequently bacteriological studies and animal inoculation tests. A wide variety of pathological conditions were diagnosed in this way. Bacteriological tests of food products for spoilage and food poisoning organisms also were made.

3. In a continuation of experiments with a special precipitin test designed to detect infection with trichinae in pork, it was determined that the accuracy of the test varied with the degree of infection. When the number of larvae per unit of muscle tissue was low, as is the case in most farm-fed hogs that harbor these parasites, the reaction was so slight at the times as to be considered doubtful. Under these

circumstances, it was concluded that approximately 20 percent of the infections which would likely be encountered in this group of swine fall into the doubtful category, thus invalidating the practical usefulness of the test.

4. A study of country brand hams to determine whether the rather prolonged curing process will destroy all viable trichinae was completed during the year. A total of 8 products made from trichina-infected pork, in 3 distinct tests carried out at different times, was involved. The curing procedures were carried out in 2 commercial packing houses where such hams are processed for trade. The finished products were examined by special techniques which bring to light living and dead trichinae, and by feeding copious quantities of the meat to rats--animals highly susceptible to trichinosis. The results showed conclusively that the curing of country brand hams under Federal supervision destroyed all live trichinae, thus rendering them safe for human consumption.

5. To determine whether the current practices of cooking garbage before feeding it to hogs reduces the risk to the consumer of acquiring trichinae from garbage-fed hogs, over 1,200 diaphragms obtained from such hogs were examined by the laborious procedure of digestion. Although nearly 10 percent of the samples so examined contained trichinae, the number of worms found in individual samples was appreciably lower than those discovered before cooking of garbage was instituted to prevent the spread of vesicular exanthema. Over 80 percent of the trichina-infected diaphragms examined contained less than 1 larva per gram, and only somewhat less than 2 percent of the samples contained more than 100 larvae per gram. This study is being continued for the reason that some or perhaps nearly all of the samples examined during the year were taken from hogs which were fed uncooked garbage during part of the time that they were in the feed lots.

6. Experiments were conducted to determine whether the muscle parasites known as Sarcocystis or Miescher's sacs are in any way injurious to health. These parasites occur in the flesh of practically all food animals but are not discovered in all cases on account of their small size and because they do not always stand out in sharp contrast to the flesh in which they are imbedded. There is published evidence that Sarcocystis contains a substance which is toxic when injected into the body of small mammals. To ascertain whether these parasites also are injurious when swallowed with meat, over 30 mice were fed on the flesh of other mice that were heavily infected with these parasites. No ill effects were noted as a result of this feeding. It is planned to continue these tests by feeding trials with flesh of hogs, sheep, and other animals harboring Sarcocystis in their muscles.

7. Process Butter Act

The scope of operations under the Process Butter Act is indicated by the following:

Fiscal Year 1954

Packing Stock Butter

Received (Pounds)	Condemned (Pounds)
1,189,939	13,973

Process or Renovated Butter Produced (Under Federal Inspection) (Pounds)

964,647

(b) Payments to States, Hawaii, Alaska, and Puerto Rico, Agricultural Research Service

Appropriation Act, 1955 and Base for 1956	$19,453,708
Budget Estimate, 1956	24,753,708
Increase (to strengthen and expand the research programs of the State agricultural experiment stations as authorized by Title I, Section 9, of the Bankhead-Jones Act, as amended)	+5,300,000

PROJECT STATEMENT

Project	1954	1955 (estimated)	Increases	1956 (estimated)
1. Hatch Act (March 2, 1887)	$719,905	$720,000	- -	$720,000
2. Adams Act (March 16, 1906)	719,848	720,000	- -	720,000
3. Purnell Act (February 24, 1923)	2,879,355	2,880,000	- -	2,880,000
4. Bankhead-Jones Act, secs. 3 and 5, Title I (Act of June 29, 1935)	2,862,838	2,863,708	- -	2,863,708
5. Bankhead-Jones Act, Title I, secs. 9 and 11, of the Act approved June 29, 1935, as amended by the Act of August 14, 1946 (Research and Marketing Act of 1946)	5,986,505	11,500,000	+$5,300,000(1)	16,800,000
6. Hawaii Act (May 16, 1928)	90,000	90,000	- -	90,000
7. Alaska Act (February 23, 1929)	15,000	15,000	- -	15,000
8. Alaska Act (June 20, 1936) as amended by the Act of August 29, 1950 (P. L. 739)	75,000	75,000	- -	75,000
9. Puerto Rico Act (March 4, 1931)	88,871	90,000	- -	90,000
10. Agricultural Marketing Act (Title II) sec. 204(b) (August 14, 1946)	268,000	500,000	- -	500,000
Unobligated balance	16,386	- -	- -	- -
Total available or estimate	13,721,708	19,453,708	+5,300,000	24,753,708
Transfer in 1955 Estimates from "Agricultural Marketing Act, Agriculture"	-268,000	- -		
Total appropriation or estimate	13,453,708	19,453,708		

INCREASE

(1) An increase of $5,300,000 to strengthen and expand the research programs of the State Agricultural Experiment Stations as authorized by Title I, Section 9, of the Bankhead-Jones Act, as amended.

Need for Increase: The proposed increase is needed to expand and strengthen research by the state agricultural experiment stations in all subject-matter fields. This research is currently in progress at some 500 research centers which the states maintain. Problem areas in which increased research is urgent exist in all phases of the agricultural industry. The need for the increase is also evidenced by the general recognition of the inadequacy of the current program to cope with many of the problems confronting agriculture and the assurance born of experience, that increased support will continue to yield substantial dividends not only to farmers but to the welfare of the entire Nation.

Preliminary plans by state experiment stations for new expanded research place special emphasis on the following areas:

1. More efficient livestock production, including effective control of animal diseases and parasites.
2. Development of production practices to increase efficiency of farm operations.
3. Greater efficiency in the marketing and utilization of farm commodities.
4. Irrigation, conservation and management of soils.
5. Reducing severity of losses from plant diseases and insects.

While cash receipts for the marketing of livestock and livestock products comprise about 60 percent of the gross farm income of the Nation, there is urgent need for information which will permit greater efficiency in livestock production. The inherent low productive capacity of much of the livestock population, inadequate nutrition, and losses from diseases and parasites are the major factors contributing to the present relative inefficiency in livestock production. Most of the state experiment stations give high priority to the need for expanded research in this field. While extensive effort is presently directed to breeding research, the potential benefits from greater efforts are still very large. For example, such problems as dwarfism and extreme variability in rate and efficiency of grain in beef cattle will undoubtedly be solved if sufficient research can be directed to them.

Similarly, lack of information on the interaction and interdependability of nutrient factors in nutrition, the mode of action of antibiotics, physiology of the rumen of cattle and sheep, and a host of related problems limit the most efficient feeding of livestock.

Statistices on livestock and poultry show that from 15 to 20 percent of livestock and poultry die before reaching marketable or productive age. Considerably more animal research is needed to improve present knowledge of the causative agents, treatments and control measures for common diseases of poultry and livestock and for new diseases that often spread rapidly and gain a strong foothold in prominent livestock- producing States. Research on cattle diseases is expensive, but the reduction

of the very large economic losses to farmers caused by livestock disease hinges to a considerable extent on the ability of experiment stations to harness science to the problem. Losses on dairy farms from two recent diseases, leptospirosis and vibriosis, are increasing, but no satisfactory control method has so far been found. Bloat in ruminants in not new but requires research on a scale which few institutions have been able to finance. Hemorraghic disease in poultry, nodular disease in sheep, and atrophic rhinitis in swine are but a few additional examples of animal diseases for which research needs considerably more support than presently available.

If agriculture is to be in a strong competitive position, it is essenial that the efficiency of all farm operations be improved wherever possible. A major problem is the reduction of costs in relation to production and distribution. Production and marketing costs have not gone down commensurately with prices received by farmers, and this has resulted in less income to the producer and handler while prices to consumers have remained high. Major advantages should accrue through emphasis given by experiment stations to research directed at increasing efficiency of production. There is a basic need for more information on relative costs of different farming systems under different price levels to provide farmers with alternate choices best adapted to their personal situations, available capital and soil resources. In the interest of a more efficient agriculture under modern conditions, therefore, added support is needed for specific investigations in agricultural engineering, farm management, and utilization of surplus commodities and forage crops.

An expanded program of research on farming systems and farming adjustments looms important in many States. More specifically, greater research effort needs to be directed at the integration of new methods of production into farming systems economically adapted to varying locations and conditions, the effects of farm tenure and credit on land utilization, the replacement value of different feeds for livestock, the relative costs and efficiency of different conservation, soil, crop and livestock management practices, the economic aspects of land use in rural-urban fringe areas and related problems.

Only through such research can the experiment stations provide recommendations that will prove dependable for making the necessary adjustments in farming.

In the area of marketing much additional research is needed aimed at prolonging the marketable life of fresh foods such as fruits and vegetables. Preliminary studies have given promising leads that much can be accomplished along these lines, eliminating in some cases as high as 33 percent of food waste en route to the consumer. Food conservation research is needed to insure higher returns to the producers, lower prices to the consumer and plentiful supply of products of high nutritional quality.

The pricing procedures used for various grades and quantities of fruits and vegetables need to be analyzed. There is a need to determine the relative importance of various factors influencing the decision in purchasing these products and to determine if and what demand there may be for consumer grades. Additional information is also needed urgently on the post-harvest preservation of horticultural crops through better methods of handling, conditioning and refrigerating.

The water crisis in areas of the Southwest, resulting from a lowering of ground water tables and the erratic rainfall patterns of recent years, focuses attention on the need for research on more economic use of present rainfall water supplies for crop production and on the amount of water required to grow economic units of specific crops or forage from different kinds of native vegetation. A number of basic and technical soil and plant nutritional problems related to moisture and tillage require solution before large acreages of poorly drained alkaline and saline soils in Western States can be restored to productive farm use.

Despite the great progress made in acquiring knowledge in the microbial relationship to animal life, there is considerable lack of knowledge concerning these relationships to plant life. In recent experiments antibiotices have been used to control bacteriological diseases of plants for which no previous effective control measures were available, confirming the belief of microbiologists that antibiotics can play an important role in the control of plant pathogens once enough research is undertaken to learn where and how to establish uses.

Likewise, additional research on biological control of insect pests is highly promising and urgently needed. The rapid ascendancy of relatively new insect pests, for example the sweet clover weevil, poses very urgent problems, which unless met means that extensive acreage of such important crops will soon go out of production. A more complete appraisal of the nature and extent of damages to crops from nematodes and more effective means of combating this insidious pest is another area of research which must be expanded.

The Research and Marketing Act of 1946 provides for a Regional Research Fund consisting of not more than 25 percent of the funds available under Section 9 of the Bankhead-Jones Act "for cooperative research in which two or more State agricultural experiment stations are cooperating to solve problems that concern the agriculture of more than one State". Experience has shown that this Regional Research Fund establishes a very effective mechanism for coordinated research effort. The state stations augment these funds with substantial amounts of other Federal-grant and non-federal funds to permit a broad attack on major agricultural problems affecting groups of states. The additional funds requested for the cooperative regional research program are needed to carry out well-developed plans of the four regional groups of experiment stations and the Committee of Nine, representing the directors of the State experiment stations. These plans provide for new work in the field of marketing and agricultural economics including research in the marketing of forest products in the North Central and Southern regions, of sheep and lambs in the Western Region, and of processed products in the Northeastern region. The Western region would also begin work in the marketing of horticultural specialty products including ornamental plants and cut flowers, and the demands and acceptability of superior quality wools as compared with standard wools and their competitive position with foreign wools. Other new studies would ivolve the improvement of livestock marketing information, the economic potentials of farm forestry, and the requirements of farm finance for changing agricultural systems.

Investigations dealing with the production of animals and animal products would involve cooperative basic studies of the chemistry and physiology of bloat, expansion of animal disease investigations to include bovine leptospirosis, the white muscle disease of beef cattle, and anaplasmosis; and the production of early market lambs. Improved production of crop plants would be sought through studies of the weather hazard in crop production in the North Central States, use of supplemental irrigation in the Northeast, and water and soil conservation management studies in the West. The latter would include the economics of ground water use and other complex problems involved in ground water development. The improvement of forest trees through breeding will be studied cooperatively in the Northeastern and Southern regions.

Inter-regional interests would be served by the establishment of a central repository for strains of the Newcastle virus affecting poultry and a repository for the isolation and maintenance of virus-free fruit tree stocks. These repositories or banks would make available to research workers and industry the tools needed for solution of problems involved in the more effective control of virus diseases of poultry and fruit trees.

Plan of Action: Of the funds requested, 72 percent, or $3,816,000, would be distributed to the agricultural experiment stations in each of the States, Hawaii, Alaska, and Puerto Rico in accordance with prescribed formulas in the act and would be matched in full. Twenty-five percent, or $1,325,000 would be made available for accelerating the program of regional cooperative research authorized by section 9(b)3 of the act. Three percent of the increase, or $159,000 would be available for additional expenses by the Office of Experiment Stations necessary for administration of the increased amount of funds available to the experiment stations, and for coordination of research among the States, and between the States and the Federal Government. It would be used to strengthen the technical staff required to help plan, coordinate, and review the over-all research program, so as to obtain the maximum benefit of the increase. The distribution of the increase by States is shown in the following table.

Allotments to State Agricultural Experiment Stations, Under the $5,300,000 Increase (72 Percent - Sections 9(b)1 & 2)

Alabama	$ 117,607.62
Alaska	23,211.54
Arizona	33,448.61
Arkansas	97,604.35
California	106,040.50
Colorado	44,206.85
Connecticut	35,743.41
Delaware	25,677.10
Florida	57,787.44
Georgia	121,712.31
Hawaii	30,850.41
Idaho	38,496.78

Illinois	$ 112,443.38
Indiana	97,426.05
Iowa	99,056.76
Kansas	68,351.17
Kentucky	121,686.35
Louisiana	82,835.59
Maine	39,131.76
Maryland	49,165.46
Massachusetts	44,030.80
Michigan	106,462.31
Minnesota	96,230.35
Mississippi	121,459.66
Missouri	107,235.25
Montana	36,664.13
Nebraska	60,237.60
Nevada	23,246.27
New Hampshire	29,346.78
New Jersey	43,580.21
New Mexico	36,685.23
New York	107,039.88
North Carolina	164,936.86
North Dakota	46,340.68
Ohio	128,176.10
Oklahoma	79,010.48
Oregon	51,122.91
Pennsylvania	137,449.44
Puerto Rico	113,377.08
Rhode Island	24,541.66
South Carolina	93,416.50
South Dakota	45,835.04
Tennessee	123,610.20
Texas	165,025.41
Utah	31,765.69
Vermont	31,322.87
Virginia	105,547.67
Washington	58,151.57
West Virginia	76,377.01
Wisconsin	97,696.74
Wyoming	27,593.99
Total	$3,815,999.81
Regional Research Fund (25%)	1,325,000.00
Administration (3%)	159,000.00
Total	$5,299,999.81

CHANGE IN LANGUAGE

The estimates include a proposed change in the language of this item as follows (new language underscored; deleted matter enclosed in brankets):

> For payments to the States, Hawaii, Alaska, and Puerto Rico to be paid quarterly in advance where applicable, to carry into effect the provisions of the following Acts relating to agricultural experiment stations:
>
> Hatch Act * * * Adams Act * * * section 204(b) of the Agricultural Marketing Act, the Act approved August 14, 1946 (7 U.S.C. 1623), $500,000; in [all] all, payments to States, Hawaii, Alaska, and Puerto Rico [$19,453,708] $24,753,708.

The change in language proposes the insertion of a comma which was inadvertently omitted in the 1955 appropriation act.

STATUS OF PROGRAM

General: The appropriation "Payments to States, etc." represents the Federal Government's support and encouragement to the State, Territorial, and Puerto Rican agricultural experiment stations which were established as departments of the land-grant colleges pursuant to the provisions of the Hatch Act of 1887.

The State agricultural experiment stations conduct research and experiments along the lines authorized by the several-grant fund acts and the complementary acts of the States on the many problems constantly encountered in the development of a permanent and sustaining agriculture and in the improvement of the economic and social welfare of the farm family. Because of differences in the climate, soil, market outlets, and other local conditions, each State has distinct problems of production and marketing of crops and livestock. The farmers in the individual States naturally look to their State agricultural experiment stations for solution of State and local problems, and in recent years have requested increased service to help meet changing conditions.

The research programs of the State stations, to be most effective, include participation in regional and national programs. Joint attack by a group of State stations is the most effective and often the only practical approach to problems of common interest. The stations, to an ever increasing extent, are acting as regional groups to provide cooperative coordinated attacks on problems of regional and national interest. In a similar manner, the research programs of the State agricultural experiment stations and the Department of Agriculture are supplementary and interdependent.

These Federal-grant funds constitute a powerful force in bringing about inter-State cooperation and Federal-State collaboration in the planning and conduct of this over-all program of agricultural research. Therefore, the full impact of the Federal-grant funds on this program cannot be fully evaluated solely on the basis of the amount of funds thus provided.

Research at the stations during the fiscal year 1954 included approximately 4,600 specific lines of research financed wholly or in part by Federal-grant funds and about 5,800 lines of research under non-Federal funds available to the stations.

These lines of research are continued as long as they are progressively productive. Fifteen to 18 percent of the research program passes its point of maximum productiveness annually and is replaced by new research on pressing problems.

Distribution of Payments: Table A indicates the distribution of funds to the various stations during the fiscal year 1955 under the formulas contained in the authorizing legislation. Table B shows the distribution by States of Payments to States for research for the fiscal years 1954, 1955, and 1956 (estimated). Table C indicates expenditures of non-Federal funds by each of the State experiment stations during 1954. Table D indicates direct payments to States, Hawaii, Alaska, and Puerto Rico, indicating those requiring offset and those not requiring offset, and basis of distribution as estimated for 1956.

Table A

Distribution by State of Payments to States as Authorized by the Hatch, Adams, and Purnell Acts, Title I, Sections 5 and 9, Bankhead-Jones Act, and Section 204(b), Agricultural Marketing Act - Fiscal Year 1955

State	Hatch, Adams, and Purnell Acts 1/	Title I, Section 5, Bankhead-Jones Act	Title I, Sections 9(b)1 and 9(b)2 Bankhead-Jones Act	Section 204(b) Agricultural Marketing Act	Total Payments to States
Alabama	$ 90,000.00	$ 88,305.89	$ 255,186.33	$ 6,100.00	$ 439,592.22
Alaska	90,000.00	4,736.40	50,364.65	4,200.00	149,301.05
Arizona	90,000.00	16,740.68	72,577.17	4,000.00	183,317.85
Arkansas	90,000.00	66,187.20	211,783.02	—	367,970.22
California	90,000.00	102,716.44	230,087.89	10,300.00	433,104.33
Colorado	90,000.00	25,460.16	95,920.53	5,000.00	216,380.69
Connecticut	90,000.00	22,514.38	77,556.44	10,500.00	200,570.82
Delaware	90,000.00	5,970.02	55,714.48	—	151,684.50
Florida	90,000.00	48,046.76	125,387.84	14,000.00	277,434.60
Georgia	90,000.00	98,402.95	264,092.75	20,450.00	472,945.70
Hawaii	90,000.00	10,463.17	66,939.57	—	167,402.74
Idaho	90,000.00	16,866.19	83,530.75	5,000.00	195,396.94
Illinois	90,000.00	99,478.95	243,980.90	12,000.00	445,459.85
Indiana	90,000.00	79,141.32	211,396.15	27,500.00	408,037.47
Iowa	90,000.00	74,227.20	214,934.48	45,150.00	424,311.68
Kansas	90,000.00	53,057.23	148,309.14	12,400.00	303,766.37
Kentucky	90,000.00	93,378.88	264,036.42	16,500.00	463,915.30
Louisiana	90,000.00	60,813.78	179,737.59	—	330,551.37
Maine	90,000.00	22,270.68	84,908.54	17,500.00	214,679.22
Maryland	90,000.00	36,488.62	106,679.77	16,500.00	249,668.39
Massachusetts	90,000.00	36,698.19	95,538.52	4,000.00	226,236.71
Michigan	90,000.00	93,777.64	231,003.12	67,500.00	482,280.76
Minnesota	90,000.00	68,128.03	208,801.71	—	366,929.74
Mississippi	90,000.00	80,016.75	263,544.53	27,000.00	460,561.28
Missouri	90,000.00	78,849.57	232,680.25	13,000.00	414,529.82
Montana	90,000.00	18,004.00	79,554.23	—	187,558.23
Nebraska	90,000.00	41,343.56	130,704.24	5,000.00	267,047.80
Nevada	90,000.00	3,435.49	50,440.02	—	143,875.51
New Hampshire	90,000.00	11,363.43	63,676.97	—	165,040.40
New Jersey	90,000.00	32,575.43	94,560.83	—	217,136.26
New Mexico	90,000.00	17,027.28	79,600.02	—	186,627.30
New York	90,000.00	107,782.14	232,256.34	6,200.00	436,238.48
North Carolina	90,000.00	135,186.64	357,881.86	—	583,068.50
North Dakota	90,000.00	26,670.28	100,550.54	—	217,220.82
Ohio	90,000.00	118,853.05	278,117.96	11,000.00	497,971.01
Oklahoma	90,000.00	63,847.68	171,437.82	16,000.00	341,285.50
Oregon	90,000.00	35,230.21	110,927.06	17,000.00	253,157.27
Pennsylvania	90,000.00	155,317.78	298,239.36	2,500.00	546,057.14
Puerto Rico	90,000.00	66,036.41	246,006.87	—	402,043.28
Rhode Island	90,000.00	6,257.12	53,250.76	5,000.00	154,507.88
South Carolina	90,000.00	68,111.24	202,696.17	—	360,807.41
South Dakota	90,000.00	26,510.78	99,453.39	7,500.00	223,464.17
Tennessee	90,000.00	92,293.90	268,210.82	9,200.00	459,704.72
Texas	90,000.00	150,461.58	358,073.99	15,425.00	613,960.57
Utah	90,000.00	12,499.09	68,925.56	5,000.00	176,424.65
Vermont	90,000.00	12,884.06	67,964.72	1,500.00	172,348.78
Virginia	90,000.00	88,612.55	229,018.54	3,132.00	410,763.09
Washington	90,000.00	43,950.86	126,177.94	23,000.00	283,128.80
West Virginia	90,000.00	65,794.28	165,723.72	2,500.00	324,018.00
Wisconsin	90,000.00	73,259.15	211,983.49	6,500.00	381,742.64
Wyoming	90,000.00	7,662.93	59,873.77	12,500.00	170,036.70
Unallocated				12,443.00	12,443.00
Total	$4,590,000.00	$2,863,708.00	$8,279,999.53	$500,000.00	$16,233,707.53
2/ Regional Research Fund			2,875,000.00		2,875,000.00
Grand Total	$4,590,000.00	$2,863,708.00	$11,154,999.53	$500,000.00	$19,108,707.53

1/ Each station receives $15,000 Hatch; $15,000 Adams, and $60,000 Purnell funds.
2/ These funds allotted to Regional Research projects recommended by the Committee of Nine, in accordance with procedures outlined in Section 9(b)3, Title I, of the Bankhead-Jones Act as amended.

TABLE B

Distribution by State of Payments to States for Research

Fiscal Years 1954-1956

State	Fiscal Year 1954	Fiscal Year 1955	Fiscal Year 1956 (Estimated)
Payments authorized by the Hatch, Adams, and Purnell Acts, Title I, Sections 5 and 9(b) 1 and 2, Bankhead-Jones Act.			
Alabama	$ 311,446.59	$ 433,492.22	$ 551,099.84
Alaska	121,013.61	145,101.05	168,312.59
Arizona	144,607.04	179,317.85	212,766.46
Arkansas	266,682.69	367,970.22	465,574.57
California	312,762.30	422,804.33	528,844.83
Colorado	165,505.66	211,380.69	255,587.54
Connecticut	152,978.61	190,070.82	225,814.23
Delaware	125,038.44	151,684.50	177,361.60
Florida	203,466.51	263,434.60	321,222.04
Georgia	326,190.47	452,495.70	574,208.01
Hawaii	135,388.16	167,402.74	198,253.15
Idaho	150,447.45	190,396.94	228,893.72
Illinois	316,773.33	433,459.85	545,903.23
Indiana	279,434.97	380,537.47	477,963.52
Iowa	276,366.93	379,161.68	478,218.44
Kansas	220,435.92	291,366.37	359,717.54
Kentucky	321,137.02	447,415.30	569,101.65
Louisiana	244,589.91	330,551.37	413,386.96
Maine	156,570.79	197,179.22	236,310.98
Maryland	182,147.63	233,168.39	282,333.85
Massachusetts	176,544.38	222,236.71	266,267.51
Michigan	304,301.02	414,780.76	521,243.07
Minnesota	267,068.05	366,929.74	463,160.09
Mississippi	307,518.25	433,561.28	555,020.94
Missouri	290,247.97	401,529.82	508,765.07
Montana	149,510.55	187,558.23	224,222.36
Nebraska	199,537.08	262,047.80	322,285.40
Nevada	119,752.03	143,875.51	167,121.78
New Hampshire	134,586.20	165,040.40	194,387.18
New Jersey	171,911.52	217,136.26	260,716.47
New Mexico	148,557.73	186,627.30	223,312.53
New York	318,959.36	430,038.48	537,078.36
North Carolina	411,907.61	583,068.50	748,005.36
North Dakota	169,131.43	217,220.82	263,561.50
Ohio	353,958.08	486,971.01	615,147.11
Oklahoma	243,293.50	325,285.50	404,295.98
Oregon	183,105.20	236,157.27	287,280.18
Pennsylvania	400,920.92	543,557.14	681,006.58
Puerto Rico	284,387.82	402,043.28	515,420.36
Rhode Island	124,040.13	149,507.88	174,049.54
South Carolina	263,865.76	360,807.41	454,223.91
South Dakota	168,399.51	215,964.17	261,799.21
Tennessee	322,229.98	450,504.72	574,114.92
Texas	427,282.80	598,535.57	763,560.98
Utah	138,460.26	171,424.65	203,190.34
Vermont	138,343.92	170,848.78	202,171.65
Virginia	298,100.49	407,631.09	513,178.76
Washington	199,782.84	260,128.80	318,280.37
West Virginia	242,258.83	321,518.00	397,895.01
Wisconsin	273,859.24	375,242.64	472,939.38
Wyoming	128,901.42	157,536.70	185,130.69
Total	11,773,707.91	15,733,707.53	19,549,707.34
Payments authorized for Regional Research Fund, Section 9(b)3, Bankhead-Jones Act.	1,500,000.00	2,875,000.00	4,200,000.00
Payments authorized for Marketing Research: Section 204(b), Agricultural Marketing Act 1/	268,000.00	500,000.00	500,000.00
Total	13,541,707.91	19,108,707.53	24,249,707.34

1/ Allotted to States by projects on the basis of recommendations by a committee of experiment station directors and approved by the State Experiment Stations Division, Agricultural Research Service.

TABLE 8

Expenditures from non-Federal Funds by State, Fiscal Year 1954

Alabama	$ 1,422,983.40
Alaska	195,134.77
Arizona	501,911.96
Arkansas	743,110.69
California	6,705,485.63
Colorado	854,956.48
Connecticut:	
State	380,962.08
Storrs	547,502.00
Delaware	354,159.16
Florida	3,009,683.61
Georgia	1,927,110.12
Hawaii	542,672.21
Idaho	729,636.40
Illinois	2,255,714.27
Indiana	2,510,573.02
Iowa	2,352,406.71
Kansas	1,368,963.71
Kentucky	627,856.58
Louisiana	1,797,267.84
Maine	328,024.42
Maryland	698,325.14
Massachusetts	506,484.08
Michigan	1,561,020.22
Minnesota	2,454,474.77
Mississippi	1,418,796.31
Missouri	806,812.29
Montana	$ 844,904.42
Nebraska	1,317,717.03
Nevada	85,304.97
New Hampshire	160,841.88
New Jersey	1,611,434.40
New Mexico	376,744.20
New York:	
Cornell	3,091,295.49
State	1,021,608.72
North Carolina	1,713,609.95
North Dakota	800,084.22
Ohio	1,800,762.84
Oklahoma	1,325,647.70
Oregon	1,982,111.63
Pennsylvania	1,266,553.01
Puerto Rico	1,057,686.19
Rhode Island	164,214.74
South Carolina	778,454.93
South Dakota	455,320.63
Tennessee	776,435.92
Texas	2,749,062.19
Utah	576,288.98
Vermont	121,648.69
Virginia	1,075,420.28
Washington	1,961,643.83
West Virginia	441,672.69
Wisconsin	2,612,814.00
Wyoming	433,893.22
Total	67,205,204.62

Table D - Statement of direct payments to States, Hawaii, Alaska, and Puerto Rico, indicating those requiring offset and those not requiring offset, and basis of distribution, as estimated for 1956.

Item	Total Estimate, 1956	Amount to be paid without offset	Amount Requiring Offset and Basis of Allotment	
			Amount	Basis of Allotment
Hatch Act	$ 720,000	$ 720,000	None	Equal amounts ($15,000) to each State.
Adams Act	720,000	720,000	None	Equal amounts ($15,000) to each State.
Purnell Act	2,880,000	2,880,000	None	Equal amounts ($60,000) to each State.
Bankhead-Jones Act, secs. 3 and 5, Title I	2,863,708	-	$2,863,708	Principally on the basis of rural population in the States, Territories and Puerto Rico.
Bankhead-Jones Act, secs. 9 and 11, Title I (as amended by the Act of Aug. 14, 1946)	16,296,000	4,200,000	$12,096,000	20% in equal amounts to each State, Territory and Puerto Rico; not less than 52% by formula; 1/2 on basis of relative rural population, 1/2 on basis of relative farm population, 25% regional research funds on basis of recommendations of Committee of Nine established by law.
Hawaii Station Act	90,000	90,000	None	
Alaska Station Act of Feb. 23, 1929	15,000	15,000	None	
Alaska Station Act of June 20, 1936 as amended by the Act of Aug. 29, 1950	75,000	75,000	None	
Puerto Rico Station Act	90,000	90,000	None	
Agricultural Marketing Act, sec. 204(b), Act of Aug. 14, 1946	500,000	-	500,000	By project on the basis of recommendations by committee of experiment station directors and approval by Office of Experiment Stations
Total, direct Federal payments	24,249,708	8,790,000	15,459,708	

Examples of Research Findings that Reached the Stage of Public Application During the Year.

1. Fireblight controlled with antibiotics. The Missouri and Ohio experiment stations recently reported control of fireblight with streptomycin and terramycin, two important antibiotics. Fireblight is a bacterial disease of apples and pears which has plagued orchardists for many years. At times fireblight has wiped out entire orchards of Jonathan, York Imperial, Wealthy, and Yellow Transparent apples and has prevented the development of pear growing as a commercial enterprise in the central and eastern United States. As a result of this research, the chemical industry is preparing formulations which are expected to become available at prices favorable to growers. The commercial sprays are to be tested by experiment stations and individual orchardists before being put on the market. Promising leads in Federal-State cooperative work at other stations suggest that antibiotics will play an increasingly important role in plant disease control.

2. Rust resistance factors found to vary under different temperatures. Research carried on cooperatively by the Minnesota Experiment Station and the Agricultural Research Service emphasizes the importance of testing new wheat variety seedlings for rust resistance both at high and low temperatures. Wheats that were found resistant to certain races of rust when exposed to infection at 65°F. were susceptible above 90°. Temperature was also found to play an important role in the ability of many rust races to infect different wheat varieties used in identifying rusts.

3. Farm storage of sorghum grains in the Gulf Coast area studied. The high moisture content of sorghum grains in the Gulf Coast area of Texas makes it imperative to handle the grain properly following harvest. The Texas Experiment Station, in cooperation with the Agricultural Research Service, and the Commodity Stabilization Service, has carried on research on adequate drying following harvest using unheated air in farm-storage type bins. The low investment in equipment is one of the main advantages in using unheated air. Five years of research have shown the importance of storing clean sorghum grain with a maximum moisture content of 12 percent. Aerating grain by forced-air ventilation was shown to be an economical and practical method of maintaining high quality during grain storage. This is advantageous both to the grain grower and commercial elevator operator for it eliminates the expensive operation of turning the grain, permits full use of all available storage space, and obtains equal distribution of fumigants for insect control. Research to obtain more effective insect control with dusts and fumigants is continuing. The method is also being tested for rice storage.

4. Pollen transmission of barley virus proved. The first proven case of pollen transmission of a virus in small grains is reported from a cooperative study on the nature of virus diseases carried on by the California Experiment Station and the Agricultural Research Service. Pollen was shown to be one means of spreading the virus causing false stripe of barley from diseased to healthy plants. By use of an electron microscope, scientists were able to locate the typical rod-shaped virus particles in the leaves, seeds, immature embryos, and pollen of diseased plants, but healthy plants did not reveal these particles. When diseased pollen was used to pollinate healthy barley plants, the characteristic virus particles appeared in about 10 percent of the seeds upon germination.

5. New procedure traces course of atrophic rhinitis. Research in cooperation with the Agricultural Research Service to discover the cause of atrophic rhinitis and to study its development in swine is reported by the Indiana Experiment Station. A modified X-ray procedure makes it possible to observe the course of the disease in living experimental swine exposed to different agents obtained from known cases. To date the specific cause of atrophic rhinitis is not known. The disease is becoming increasingly serious over wide areas in the swine-producing States. According to the Indiana station, 50 to 80 percent of an affected herd may be markedly retarded in growth, with considerable loss in weight. At present the only successful control consists in slaughter and disposal of affected herds.

6. Darkened fleece is sign of vitamin deficiency in sheep. The North Dakota Experiment Station has determined why individual sheep or entire flocks develop a dark pigmented band in their fleece, a condition that counts heavily against them in the wool market and in the selection for purebred breeding stock. For many years, the belief has been held in some quarters that this darkening might mean the line was running out genetically. Experimenting with Hampshire flocks, North Dakota scientists showed that sheep with this condition were merely suffering from a lack of vitamins A and D and that the desired light color could be restored by treating the animals with vitamin D.

7. Recommended fertilizer and production practices reduce unit costs. The Michigan station in cooperation with the Agricultural Research Service, has shown that farmers can reduce their per unit cost of producing crops by as much as 16 to 26 percent. But farmers will need to spend more money for fertilizer and other cultural practices if they are to attain these benefits. Wheat is a good example. By spending an extra $20 per acre, an average Michigan wheat producer can increase his yields by 21 bushels and lower his cost by 26 cents per bushel. The research showed that for growing alfalfa-brome hay and sugar beets, it was especially important to use improved production practices if full benefits were to be obtained from fertilizer. Making full use of recommended practices could lower the cost of producing 1 ton of alfalfa-brome hay by $3.50 and 1 ton of sugar beets by $3.

8. Castorbean "Combine" developed. Oil from castorbeans is vital in jet-engine lubrication and in hydraulic mechanisms. To stimulate mechanized production of the crop, the Federal Government several years ago enlisted the cooperation of agricultural experiment stations in the Great Plains. In 1952 this research brought announcement by the Oklahoma station that it had developed a tractor-mounted, two-row castorbean harvester which could be used for gathering unhulled beans from the tall and rugged varieties. Early this year, the Oklahoma station announced the further development in cooperation with the Agricultural Research Service of a mechanical field huller. When mounted on the harvester, it provides a mechanical field combine with which the entire job, including stripping of the plants, hulling them, and returning hulls to the soil, can be done in one operation. The hulls are high in potash and have good fertilizer value. The hulled beans take less handling, need only half the space in transportation and storage.

9. Ultrasonic waves speed cheese ripening. The Wisconsin station has shown that subjecting pasteurized milk to strong ultrasonic waves prior to curding will speed the curing process of Cheddar cheese. Many of the flavor-giving elements of normal sharp cheese showed up early and in large amounts. The Wisconsin scientists explain that the ultrasonic waves alter milk components in such a way as to make them more readily available to the special types of bacteria responsible for creating the desired flavor and texture. The ultrasonic treatment halves the time required for curing cheese and thereby reduces materially the cost of ripening cheese naturally.

10. Hormones increase efficiency of beef production. The role of hormones, particularly those of the anterior pituitary and thyroid glands and the gonads, in the regulations of growth of animals has been at least quantitatively known for about two decades. Improved methods of extraction or synthesis of these hormones has made it possible to consider their practical application in meat animal production.

Results of recent experiments conducted at the Iowa agricultural experiment station indicate that excellent results can be obtained by feeding a low level of stilbestrol daily as a part of the ration. Yearling steers fed 10 milligrams of stilbestrol daily with a fattening ration yielded an extra 0.83 pounds of gain per day in a 112-day feeding trial. Steers receiving the hormone gained 3.06 pounds daily compared with 2.23 pounds for the control lots fed the same ration without the hormone, and they made this gain on 20 percent less feed per pound of gain. The two lots of steers were comparable in carcass quality, and no ill effects were observed during the feeding period, such as abnormal mammary development, riding, or restlessness.

In other feeding trials with both heifers and steers of different breeding and different feeding histories, stilbestrol incorporated in the cattle supplement, gave good results with high grain rations, high roughage rations, and those which were intermediate in amounts of concentrates and roughage fed.

11. Biological control of Fusarium wilt of sweet potato. Infecting sweet potato plants with a mild disease-producing organism to protect them from a destructive disease is an unique approach to a control recently reported by the California agricultural experiment station. The sweet potato sprout rot Fusarium causes only a limited basal rot whereas the wilt Fusarium severely stunts or kills the plant. By first dipping the freshly cut basal end of sprouts, first in a spore suspension of the sprout rot organism and then after a time interval in a spore suspension of the wilt organism, greenhouse tests have shown that the limited basal rot caused by the weakly active sprout rot organism will protect the plant against subsequent invasion by the virulent wilt organism. Field tests, made by dipping the freshly cut sprouts in a spore suspension of the sprout rot organism and then planting in infested soil, have shown that the same protection noted under greenhouse conditions is also found to be effective in the field.

12. Premium prices for quality wheat not adequately reflected in local markets. Procedures for marketing hard red winter wheat at local elevators in Kansas have not adequately reflected central market price differentials for factors such as protein content and quality. In a study of this situation with funds made available under section 204(b) of the Agricultural Marketing Act, the Kansas experiment station showed that if growers of quality wheat are to benefit when marketing locally, they have three major alternatives: (1) establishing a marketing procedure that would result in determining price differentials at the local level; (2) an educational program designed to acquaint growers with the consequences of producing varieties that result in the classification of their locality as undesirable for milling and baking wheat; and (3) adequate consideration of milling and baking quality in support prices. The station points out that the educational program approach is the one most likely to bring about significant improvement in this area.

Regional Research Fund

For the conduct of research in which two or more State agricultural experiment stations are cooperating to solve problems that concern the agriculture of more than one State, there is available the "Regional Research Fund" authorized by Section 9(b)3 of the Bankhead-Jones Act. This fund consists of not more than 25 percent of the amount appropriated under Section 9 of the Act. Allotments are made to stations on the basis of projects recommended by the Committee of Nine established by the Act to represent the State stations.

Following are examples of work carried on in 1954 under this fund:

1. Milk distribution increased through paper packaging. In a region-wide study cooperative with the Agricultural Marketing Service, the North Central States found that paper packaging of milk is more responsible than any other factor for the shift to store sales and the expansion of milk distribution areas. Both have increased milk consumption in the region. Distribution of milk outside the city or town in which it was packaged was unimportant until after World War II. By May 1952, 83 percent of the plant operators in the North Central Region who packaged milk in paper containers had outside sales, and 23 percent of those with outside sales had distribution areas that extended 100 miles or more from their plants. The volume of milk in paper containers outside local markets comprised 12 percent of all bottled and packaged milk marketed in the region. Outside sales in paper were largest in proportion to total distribution in the sparsely populated States and among plants in small markets.

2. Expansion of milk consumption in schools studied. Another study by the experiment stations of the North Central Region cooperative with the Agricultural Marketing Service deals with opportunities for expanding milk consumption in school-lunch programs. Descriptions of milk programs have been obtained in 350 elementary and secondary schools in Chicago where milk is sold at a uniformly low price. Per capita sales of milk vary widely among these schools. Various factors, such as temperature of the milk when served, ease of obtaining it, composition of the student body, and income level in the area, are being studied in order to develop practical suggestions for expanding milk consumption.

 An experiment with milk-vending machines is under way in 18 elementary and secondary schools. Information will be obtained on increases in milk consumption obtained by use of vending machines, the number of pupils served by one machine, and the minimum enrollment needed to support a machine on a self-liquidating basis.

 Other studies directed toward expansion of milk consumption in schools are under way in Michigan, Ohio, and Wisconsin.

3. Mechanical harvesting and bulk handling of potatoes decreases costs. The complete mechanical harvesting and bulk handling of early potatoes has been studied in a regional research project by the Alabama, Florida, and South Carolina Experiment Stations and the Agricultural Research Service. Loading potatoes from field bags in bulk in the field with a field loader is a satisfactory method of handling potatoes from the field to the packing shed. Less physical damage results to the potatoes by this method and cost of loading and hauling is reduced one to two cents per 100-pound packed bag.

Farmers in the Hastings, Fla. area, who used a one-row harvester that placed the potatoes directly into bags, had a harvesting cost of about seven cents per packed 100-pound bag less than those using the conventional method of harvesting.

In Alabama, farmers who used mechanical harvesters and bulk handling equipment had a harvesting cost of about ten cents per 100-pound packed bag less than farmers who dug and handled their potatoes in the conventional way. On the farms using mechanical harvesting and bulk handling equipment, the investment varied from $6,000 to $8,500, depending on the make of equipment, method of harvesting, and other factors.

The physical damage in potatoes harvested with mechanical harvester and handled in bulk trucks was found to be only slightly greater than in potatoes handled by the conventional method. Sixty to seventy-five percent of the total physical damage in potatoes at the time of washing occurred before they were loaded on the bulk trucks, 10 to 25 percent of the damage occurred in loading the trucks, and the remainder in unloading and conveying the potatoes to the washer. The amount of physical damage was substantially reduced by the use of rubber tubes on conveyer chains and the use of padding on points of severe impact. This method gets the potatoes out of the ground and immediately into the truck, thus avoiding heat injury and desiccation.

4. Continued progress in cotton mechanization. Regional research on cotton mechanization, carried on cooperatively by State experiment stations in cotton growing States, the Department of Agriculture, and industry, continues to move rapidly toward making complete mechanized cotton production a practical reality. The Alabama experiment station announced development of a single attachment on the commercially available barbed-spindle cotton picker that increased harvesting efficiency by 5 percent. The Arkansas station reported development of a new design for flame burners. The new burner has a deflector attached at an angle, so that weeds may be flamed when the young cotton plants are only 4 to 5 inches tall, in contrast to 8 inches, the limitation of previous models. The new burner thus promises much earlier control of weeds by flaming. The Mississippi station has incorporated a novel preheating chamber in a burner, which provides improved thermal efficiency and has a low fuel requirement. The Texas experiment station reports

increases up to 50 percent in cotton seedling emergence in the High Plains area through use of a hollow, rubber-tired 1 x 10 inch press wheel. The development should result in large annual savings in labor, power, and seed. In a comparative cost study the North Carolina station found the rotary hoe and use of pre-emergence chemicals more economical for weed and grass control than hand hoeing. Trials with hill spacings varying from 30,000 to 60,000 plants per acre conducted by the South Carolina station revealed that 3 plants placed every 12 inches will give the most consistent results in yield and harvesting efficiency.

5. New technique developed for quality evaluation of live hogs. The percentage of lean meat in live hogs brought to the market place is becoming a more and more important factor affecting prices paid to farmers. Experiment station research is gradually overcoming the difficulty of determining the percentage of lean meat in the hog carcass prior to slaughter. As the result of research carried on by the Iowa, Minnesota, Ohio, and other midwestern experiment stions, procedures have been developed whereby measurements can be made of the percentages of lean meat and other carcass qualities in the live hogs. Several years ago the Iowa experiment station developed a method for making a shallow transverse incision through the skin of the back and pressing a thin measuring instrument through the soft backfat to the firm tissue underneath. During the past year the Minnesota station, using this method, developed an improved technique for estimating the percentages of lean, fat, and bone of entire swine carcasses. The accuracy of this technique has been verified by careful tissue separations in the slaughtered carcasses. It is considered sufficiently reliable to provide a quick method for estimating carcass components. Its acceptance by packers should permit farmers to realize a premium for raising quality hogs.

6. Distribution of Funds. The following table indicates the distribution of the Regional Research Fund by subject matter:

DISTRIBUTION OF REGIONAL RESEARCH FUND BY SUBJECT MATTER

	1954	1955
Marketing Research		
Cotton	$ 20,300	$ 23,600
Forage and pasture seeds	5,700	8,650
Flowers and nursery crops	- -	28,000
Food	- -	15,180
Forest products	11,100	15,600
Fruits and vegetables	78,100	113,030
Grain	15,200	49,500
Hay and feed	- -	6,300
Livestock and wool	79,575	119,550
Milk and dairy products	64,700	112,950
Potatoes	29,900	25,000
Poultry and eggs	75,950	121,300
Price policy	1,400	51,100
Total Marketing Research	$382,425	$689,760
Nonmarketing Research		
Beef cattle breeding	$131,500	$189,500
Dairy cattle breeding & sterility	113,400	171,900
Diseases & parasites of animals and poultry	59,200	163,200
Economics of production	28,100	76,400
Farm buildings	53,000	66,500
Farm housing	110,450	125,600
Farm mechanization	66,000	116,310
Field crop production	49,000	49,510
Forest crop production	- -	5,550
Human nutrition, home management, and family living	171,025	262,565
Introduction of new plants	104,200	148,500
Pasture & forage crop production	39,700	211,305
Plant pests and diseases	32,250	170,995
Poultry breeding	59,600	130,475
Soil and water management	82,650	194,230
Weed control	11,100	95,700
Total Nonmarketing Research	$1,111,175	$2,178,240
Travel by Committee of Nine	6,400	7,000
Total Regional Research Fund	$1,500,000	$2,875,000

(c) Foot-and-Mouth and Other Contagious Diseases of Animals and Poultry, Agricultural Research Service

	Eradication Activities		
	Foot-and-Mouth Disease	Vesicular Exanthema of Swine	Research
Appropriation Act, 1955, and base for 1956	a/	a/	$1,900,000
Budget Estimate, 1956	b/	a/	1,900,000

a/ Eradication activities financed by transfers as authorized in the annual appropriation act.

b/ An appropriation estimate for 1956 in the amount of $5,788,897 to cover unreimbursed expenses and transfers from Commodity Credit Corporation through June 30, 1954, including interest through June 30, 1955, is proposed under the item "Repayment to Commodity Credit Corporation for eradication of foot-and-mouth and other contagious diseases of animals and poultry". This item is explained later in these Notes under "Special Activities".

It is not anticipated that any transfers will be required in 1956 unless an emergency should arise.

ERADICATION ACTIVITIES

A. Eradication of Foot-and-Mouth Disease

	Estimated Obligations, 1955 (For which funds will be required in fiscal year 1957 to reimburse Commodity Credit Corporation)
1. Cooperation with the Government of Mexico in the eradication of foot-and-mouth disease:	
Payments to Joint Commission	$320,000
Direct Federal expenses	775,000
2. Mexican border inspection and quarantine	450,000
3. Interest	28,233
Total obligations	1,573,233
Less 1954 balance available in 1955	-160,233
Total estimate 1955	1,413,000

1/ In addition, $330,000 is being used in the program for inspection activities along the Mexican border and in Mexico from the appropriation, "Salaries and Expenses, Agricultural Research Service, Plant and Animal Disease and Pest Control", for which no reimbursement is required.

On December 31, 1954, Mexico was declared to be free of foot-and-mouth disease. Therefore, during the month of January 1955 the American and Mexican sections of the Mexico-United States Commission for the Prevention of Foot-and-Mouth Disease were greatly reduced and the border patrol force was discontinued. During the remaining five months of the fiscal year teams of veterinarians and layment will continue to operate in Mexico in the former quarantined area, but principally the area of the latest outbreak, and at slaughter houses to carry on a program of vigilance and orientation among cattlemen. This would insure that in an emergency immediate steps could be taken to eradicate a new outbreak of foot-and-mouth disease if it should occur. A meeting of the Joint Commission is scheduled for June 1955 to determine the extent to which activities will be required in the fiscal year 1956. It is not anticipated that funds will be required to be transferred from the Commodity Credit Corporation for this activity in fiscal year 1956 unless an emergency should again arise.

B. Eradication of Vesicular Exanthema of Swine

For 1955, transfers for the vesicular exanthema program have been made as follows:

"Agricultural Conservation Program" Part of unobligated balance of special appropriation for restoration of farm lands damaged by floods)	$1,197,481
"Grants, Farm Housing, Farmers' Home Administration"	500
Unobligated balance of transfers for this program in 1954	1,052,019
Total	2,250,000

It is estimated that $2,000,000 of this amount will be used for operating expenses and $250,000 for indemnities.

No reduction is anticipated during the current year in the present level of the program. This level is required to properly enforce interstate regulations to prevent the spread of the disease, for control of movement of garbage-fed hogs, and for adequate premise inspection.

No change in program costs can be predicted at this time for fiscal year 1956. However, it is anticipated that the costs will not exceed $2,250,000. While the general situation with respect to vesicular exanthema has improved, a considerable number of outbreaks of the disease are still occurring along the eastern seaboard in major garbage feeding areas. In addition, there have been a number of outbreaks recently on farms in South Carolina, traceable to hogs passing through a single auction market. To provide for the cost of the program in 1956, it is proposed to transfer funds from other appropriations or funds of the Department, including, if necessary, the transfer of funds from the Commodity Credit Corporation. This would require an appropriation in 1957 to reimburse the Corporation.

C. Eradication of scrapie in sheep

An emergency was declared by the Secretary of Agriculture in connection with an outbreak of scrapie in sheep in California on October 31, 1952. In order to provide funds for payment of indemnities necessary for the eradication of this disease, $20,000 was transferred to this appropriation from "Salaries and expenses, Bureau of Animal Industry".

This destructive virus disease was also diagnosed in Connecticut, Illinois, Indiana, Michigan, New York, Ohio and Oregon. All known infected flocks has been destroyed as of December 17, 1954, at which time the emergency was terminated. However, since that time two minor outbreaks have occurred and arrangements have been made for disposal of animals. About 800 flocks continue to be under surveillance as the result of possible exposure during the outbreaks of this disease. Since July 1, 1954 eradication activities have been financed under "Salaries and expenses, Agricultural Research Service, Plant and Animal Disease and Pest Control". These funds are considered to be adequate to cover expenses of inspections and minor outbreaks of the disease.

SUMMARY OF ERADICATION COSTS

	Actual 1954	Estimated 1955	Estimated 1956
1. Eradication of foot-and-mouth disease			
(a) Cooperation with Government of Mexico in control, eradication, and prevention of foot-and-mouth disease	$4,872,007	$1,095,000	- -
(b) Mexican border inspection and quarantine	910,410	450,000	- -
Subtotal	5,782,417	1,545,000 1/	- -
2. Eradication of vesicular exanthema of swine	1,597,981	2,250,000	2,250,000
3. Eradication of scrapie of sheep	3,943	- -	- -
Total	7,384,341	3,795,000	2,250,000

1/ Excludes estimated interest costs of $28,233.

CHANGE IN LANGUAGE

The estimates include a proposed change in the language of this item as follows (new language underscored; deleted matter enclosed in brackets):

> Eradication activities: For expenses necessary in the arrest and eradication of foot-and-mouth disease * * *, including expenses in accordance with section 2 of said Act of February 28, 1947, the Secretary may transfer from other appropriations or funds available to the bureaus, corporations, or agencies of the Department such sums as he may deem necessary, but not to exceed [$2,650,000] $2,250,000 for eradication of vesicular exanthema of swine, * * *.

The proposed change in language decreases the limitation on the amount which may be used for eradication of vesicular exanthema of swine from $2,650,000 to $2,250,000 as indicated above in connection with the explanation of the estimated program for 1956.

STATUS OF PROGRAM

ERADICATION ACTIVITIES

1. Cooperation with the Government of Mexico in the control and the eradication of foot-and-mouth disease. In fiscal year 1954 the Department continued its program of cooperation with the Mexican Government in the eradication of foot-and-mouth disease. The disease was diagnosed in Gutierrez Zamora, Veracruz, on May 23, 1953, after Mexico had been declared free of foot-and-mouth disease on September 1, 1952, following an extensive eradication campaign that was initiated in 1947.

 By the middle of March 1954 all of the known infected animals had been eradicated. All infected premises were cleaned and disinfected and susceptible test animals placed thereon. Foot-and-mouth disease appeared in test animals on a formerly infected premise on April 20, 1954. The infected and the exposed animals were immediately eradicated and the premises again cleaned and disinfected and test animals placed thereon. Inspection of the test animals for 90 days failed to reveal any symptoms of the disease. As a precautionary measure all premises within the infected and the vaccination zones were cleaned and disinfected.

 At a Commission meeting held in Mexico City on April 6 and 7, 1954, the eradication phase of the program was considered as completed, a program of extensive inspection and observation was agreed upon, and the Secretary announced his intention of opening the border December 31, 1954, if conditions continued favorable. The Commission also agreed to dispose of the rendering plant.

 During the 1954 fiscal year Commission personnel carried out 34,767,942 inspections of susceptible animals, of which 1,217 were veterinary inspections of suspicious animals. 89 samples were collected from animals showing lesions suspicious of being vesicular in nature and subjected to laboratory tests at Palo Alto; 51 samples proved positive and 5 suspicious for foot-and-mouth disease; the remaining 33 were negative.

Total animals eradicated	23,424
Total animals vaccinated	70,543
Total vehicles disinfected	540,929
Total premises cleaned and disinfected	8,937

2. Mexican border quarantine. As of July 1, 1953, a border patrol force was reactivated along the entire border to enforce the prohibition against the entry of animals susceptible to foot-and-mouth disease and to enforce prohibitions or restrictions on entry of products which might harbor the virus.

A peak of 219 employees doing border patrol work was reached during December 1953; this number was gradually reduced due to the favorable outlook in Mexico. The border patrol work was carried on in close cooperation with the Bureau of Customs and other Federal agencies operating along the border, thus continuing the close working relationships and avoidance of duplication of patrol forces along the border. An airplane patrol worked in close cooperation with the ground patrol. From July 1, 1953, through June 30, 1954, a total of 422 animals, 36,215 pounds of meat, and 23,310 pounds of hay and straw were destroyed because of illegal entry.

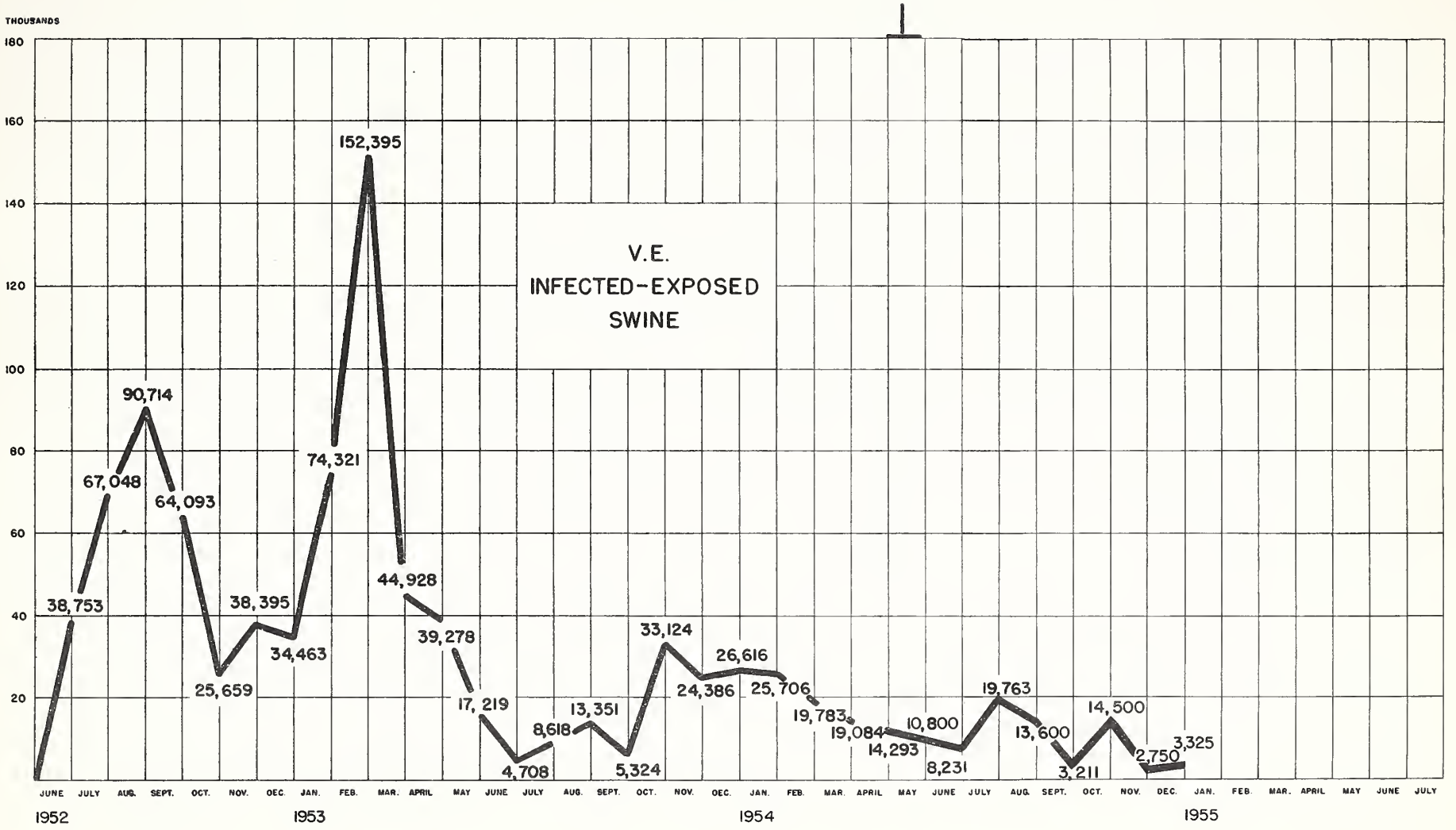
3. Eradication of vesicular exanthema of swine. During fiscal year 1954 vesicular exanthema was found quite extensively in California and several of the East Coast States. Isolated outbreaks were found in Illinois, Michigan, Montana, and Arkansas. Most of the infection was found where raw garbage was being fed to swine. However, some infection was found in swine in stockyards or packers' pens.

Even though 41 States passed laws or regulations during fiscal 1953, very few of these States took steps to prosecute violators during the early part of fiscal 1954. Since so little was known about cooking garbage to be used for hog feed, the manufacturers of cooking equipment needed time to study the problem in order to produce suitable equipment. Nevertheless, during the first six months a considerable number of feeders installed equipment and began to feed cooked garbage. During the latter half of fiscal 1954, owing to the availability of more equipment, the dissemination of information on cooking garbage, and the prosecution of feeders who were not cooking garbage, the percentage of those who continued to feed raw garbage in the majority of the States began to diminish rapidly.

The source of the disease in Michigan and Arkansas during the latter half of the year is not known. This, as well as the new infection in the Hog Belt, very likely can be attributed to one or more of the following causes:

1. Unknown raw-garbage feeders shipping infected swine into trade channels.
2. Infected swine that have not been fed properly cooked garbage entering channels of trade.
3. Holdover swine being collected at concentration points and shipped to terminal markets.
4. Possible contaminated vehicles, especially in the intrastate movement of swine from farms to concentration points.

The average number of swine reported infected during 1954 was only about one-third as many as reported during 1953, as indicated in the following chart number 1.


THOUSANDS
180
160
140
120
100
80
60
40
20
V.E.
INFECTED-EXPOSED
SWINE
38,753
67,048
90,714
64,093
25,659
38,395
34,463
74,321
152,395
44,928
39,278
17,219
4,708
8,618
13,351
5,324
33,124
24,386
26,616
25,706
19,783
19,084
14,293
10,800
8,231
19,763
13,600
3,211
14,500
2,750
3,325
JUNE JULY AUG. SEPT. OCT. NOV. DEC. JAN. FEB. MAR. APRIL MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC. JAN. FEB. MAR. APRIL MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC. JAN. FEB. MAR. APRIL MAY JUNE JULY
1952
1953
1954
1955

With a decrease of infection reported from the major public stockyards and the absence of the disease in most of the large hog-producing States during the latter part of fiscal 1954, a complacent attitude developed.

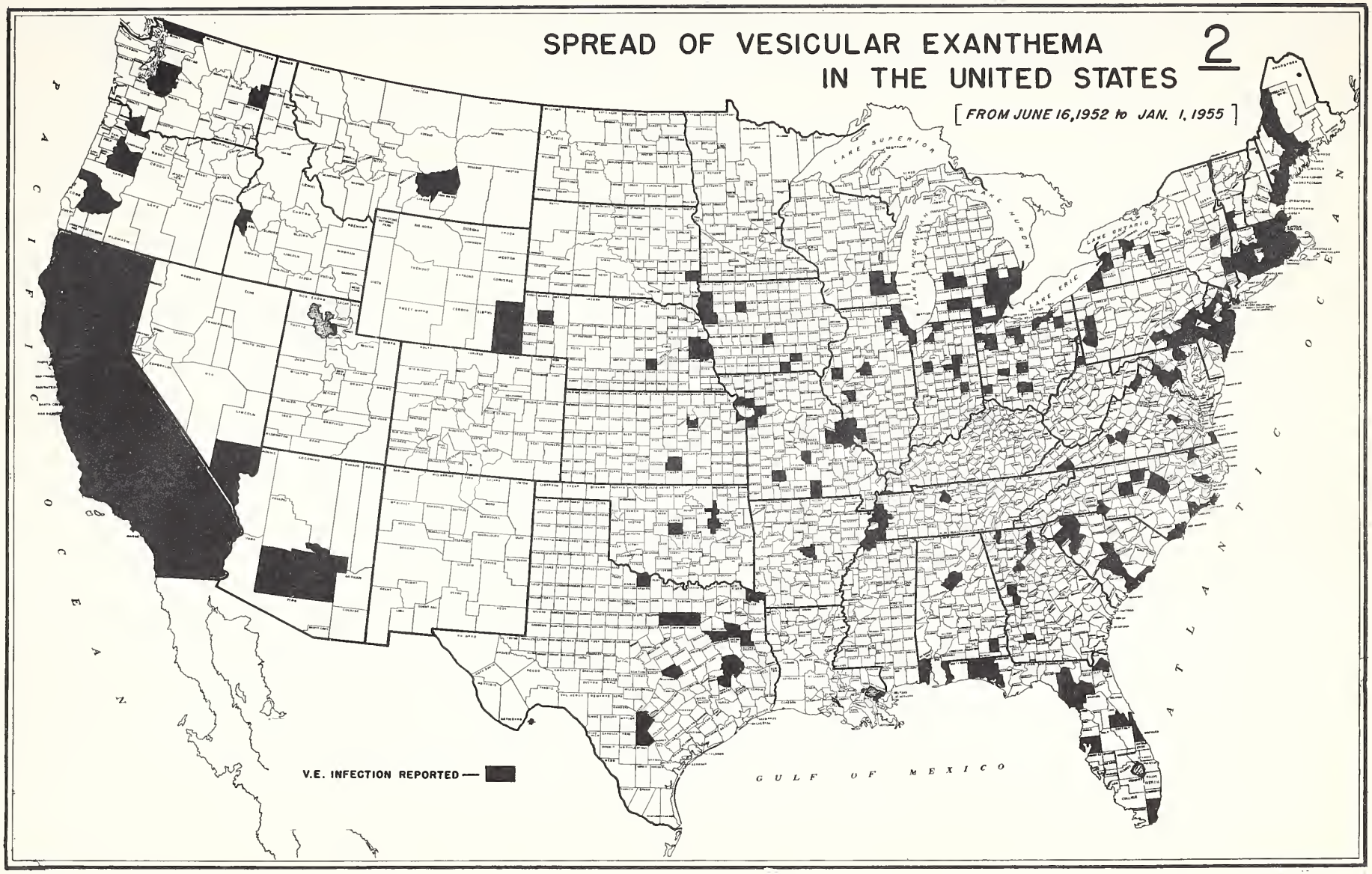
A small percentage of raw-garbage-fed swine still existed in the large hog-producing States, as well as a high percentage of such swine in the Middle Atlantic and New England States and in California and Texas. Until this type of feeding is eliminated, there is a constant possibility that the disease will occur on any of these premises, and the movement of such swine can be responsible for a major outbreak of the disease.

The incidence of infection, number of swine slaughtered, and the premises on which the disease was located are shown in the following table:

	Fiscal Year 1953	Fiscal Year 1954
Swine infected or exposed to vesicular exanthema	653,307	209,200
Swine slaughtered	168,298	210,750 a/
Garbage-feeding premises ...	481	369
Grain-feeding premises	28	60
Others - stockyards, serum plants, packers' pens, etc.	214	268

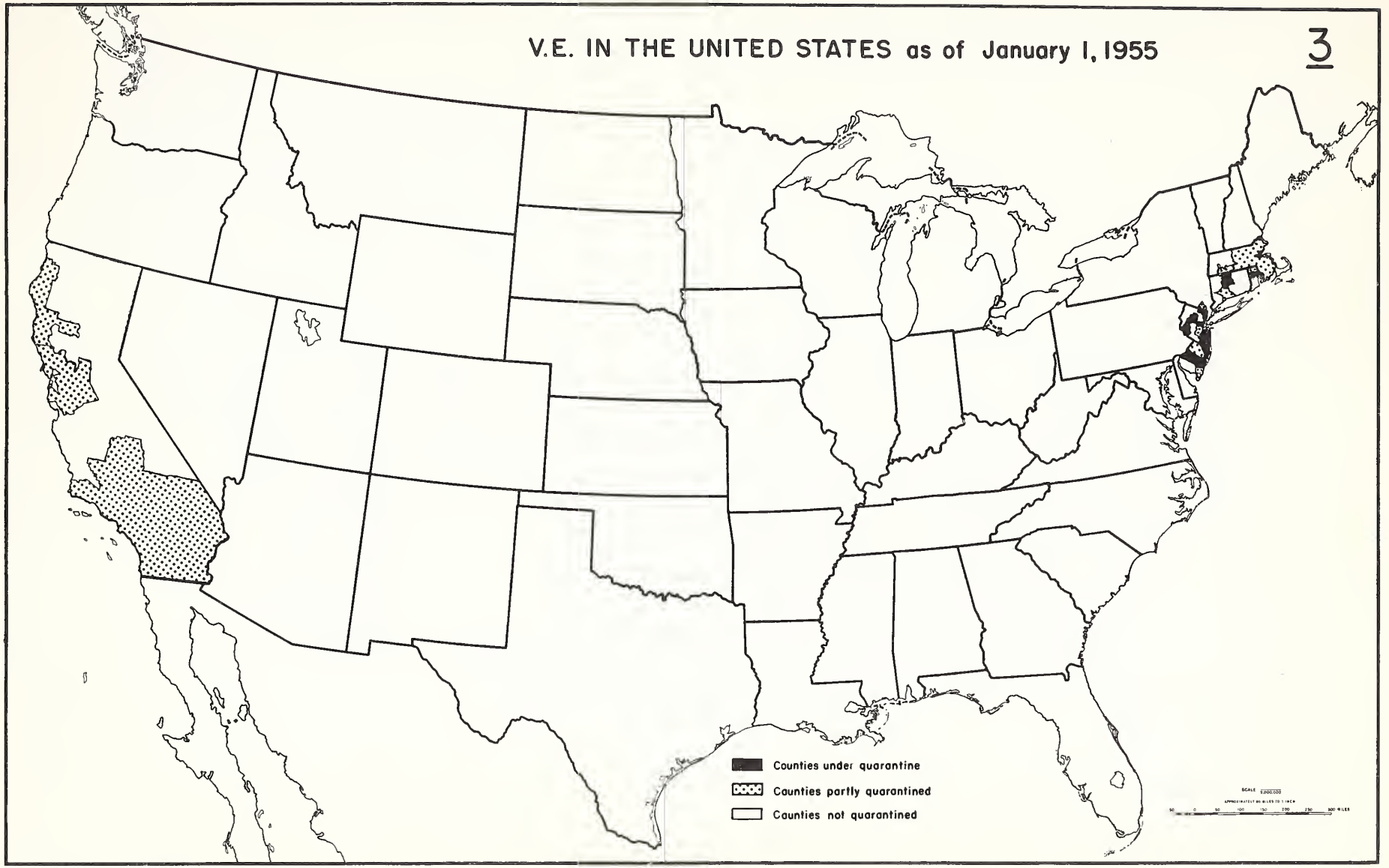
a/ Includes 42,822 carryover of infected animals awaiting slaughter as of June 30, 1953.

The steps taken to control and eradicate the disease continued to be the same as those followed in the 1953 fiscal year. The following three maps give graphic information on the progress of the eradication program.

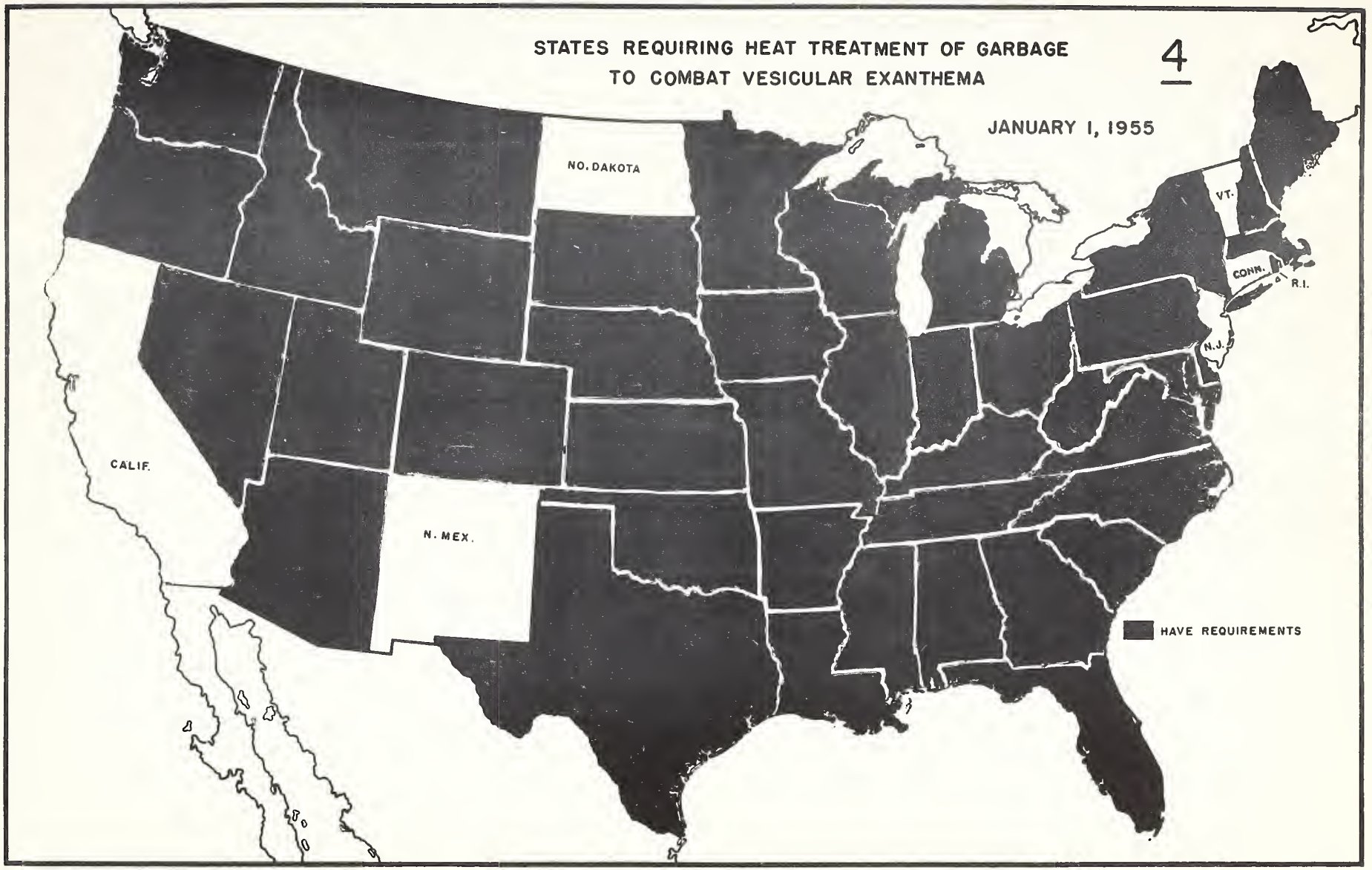

SPREAD OF VESICULAR EXANTHEMA
IN THE UNITED STATES
2
[FROM JUNE 16, 1952 to JAN. 1, 1955]
V.E. INFECTION REPORTED
GULF OF MEXICO
LAKE SUPERIOR
LAKE HURON
LAKE ONTARIO
LAKE ERIE
PACIFIC OCEAN
ATLANTIC OCEAN

V.E. IN THE UNITED STATES as of January 1, 1955

3



U.S. DEPARTMENT OF AGRICULTURE



U. S. DEPARTMENT OF AGRICULTURE

The national status on control of garbage feeding, as of October 31, 1954, is shown in the following table. The table indicates that 81 percent of the feeders who fed garbage to their swine were feeding cooked garbage as of October 31, 1954. Of the total number of swine fed garbage, 68.9 percent were fed cooked garbage and 31.1 percent were fed raw garbage.

There are 15 States where raw garbage is not known to be fed and 8 States that have less than 200 swine which are fed raw garbage. For all purposes, almost 50 percent of the States have very few, if any, raw-garbage fed swine. Of the 415,496 hogs reported being fed raw garbage in the country, 388,117 are in New Jersey, California, Texas, Pennsylvania, Massachusetts, and Connecticut. However, Massachusetts and Pennsylvania are gradually reducing the number of raw-garbage feeders in their States.

New garbage-feeders are being found almost continuously. At the same time, other feeders are going out of business so there is almost a constant turnover in most States.

Forty-three states now report more than 75 percent semi-monthly inspection of their garbage-fed premises. Fifteen States report a 100 percent semi-monthly premise inspection.

NATIONAL STATUS ON CONTROL OF GARBAGE-FEEDING
AS OF OCTOBER 31, 1954

State	Premises Feeding Garbage	Number of Swine Fed Garbage	Premises Feeding Cooked Garbage	Number of Swine Fed Cooked Garbage	Number of Swine Fed Raw Garbage	Semi-Monthly Inspec. of Premises
Alabama	688	14,925	672	14,754	171	100%
Arizona	111	8,104	100	7,983	121	99%
Arkansas	201	9,916	185	8,268	1,648	79%
California	537	218,505	365	135,828	82,677	100%
Colorado	103	43,429	103	43,429	0	100%
Connecticut	128	16,537	48	7,057	9,480	75%
Delaware	44	3,679	42	3,252	427	100%
Florida	777	38,444	707	37,589	855	99%
Georgia	561	29,886	479	27,837	2,049	88%
Idaho	116	5,318	116	5,318	0	99%
Illinois	192	31,247	192	31,247	0	97%
Indiana	143	15,695	143	15,695	0	93%
Iowa	118	9,021	71	8,109	912	80%
Kansas	302	14,467	294	14,338	129	100%
Kentucky	335	13,201	323	13,024	177	94%
Louisiana	730	19,359	730	19,359	0	100%
Maine	182	11,386	177	11,251	135	100%
Maryland	159	18,807	132	17,042	1,765	99%
Massachusetts	583	116,322	442	87,167	29,155	84%
Michigan	139	18,097	128	16,650	1,447	84%

State	Premises Feeding Garbage	Number of Swine Fed Garbage	Premises Feeding Cooked Garbage	Number of Swine Fed Cooked Garbage	Number of Swine Fed Raw Garbage	Semi-Monthly Inspec. of Premises
Minnesota	91	14,232	91	14,232	0	100%
Mississippi	230	12,224	230	12,224	0	100%
Missouri	99	19,597	99	19,597	0	100%
Montana	25	2,635	25	2,635	0	100%
Nebraska	131	7,538	131	7,538	0	100%
Nevada	46	4,039	46	4,039	0	96%
New Hampshire	107	8,763	89	8,133	630	69%
New Jersey	468	205,871	6	17,400	188,471	74%
New Mexico	49	5,102	3	946	4,156	80%
New York	308	38,211	299	37,907	304	95%
North Carolina	943	33,670	943	33,670	0	99%
North Dakota	27	2,119	8	781	1,338	98%
Ohio	699	35,429	699	35,429	0	96%
Oklahoma	423	17,340	377	16,884	456	80%
Oregon	58	7,758	42	7,250	508	77%
Pennsylvania	318	57,879	124	24,282	33,597	55%
Rhode Island	62	9,964	55	9,788	176	79%
South Carolina	788	18,869	694	17,822	1,047	87%
South Dakota	47	4,206	47	4,206	0	99%
Tennessee	541	24,254	534	23,641	613	99%
Texas	1,000	65,737	320	21,000	44,737	50%
Utah	41	4,939	36	4,354	585	100%
Vermont	100	6,295	6	1,232	5,063	98%
Virginia	676	34,840	420	32,713	2,127	96%
Washington	93	17,984	93	17,717	267	94%
West Virginia	282	9,835	266	9,755	80	92%
Wisconsin	74	10,223	74	10,223	0	100%
Wyoming	32	3,640	28	3,447	193	100%
TOTALS	13,912	1,339,538	11,234	924,042	415,496	

The following table shows the cost of the vesicular exanthema program for the 1954 fiscal year, all of which was financed under this item:

Operating Expenses:		
Enforcement		$742,750
Diagnosis		378,600
Additional inspections at stockyards		221,542
Indemnities:		
Swine	255,014	
Materials	75	255,089
Total		1,597,981

These obligations were financed by transfers to this appropriation item from other appropriations in the Department during the fiscal year as follows:

Agricultural Conservation Program (Flood Restoration funds)	$2,172,134
Grants, Farm Housing, Farmers' Home Administration	122,252
Unobligated balance brought forward	355,614
Total	2,650,000
Less unobligated balance carried forward to 1955	1,052,019
Obligated, 1954	1,597,981

In keeping with memoranda of understanding entered into with cooperating States, operating costs have been shared as far as possible on a 50-50 basis. Most cooperators have spent more than the Federal Government for this purpose. States have made equal indemnity payments, except in cases where swine are in a State by reason of interstate commerce and were exposed to or affected by the disease in another State. In such instances, the Federal Government makes the only payment, up to 50 percent of the difference between the appraised value and the net salvage. The following table shows Federal indemnities for swine and the number slaughtered by States:

Statement of Animals Slaughtered and Federal Indemnities for Swine in Eradication of Vesicular Exanthema of Swine

Fiscal Year 1954

States	Animals Slaughtered	Federal Indemnity Paid
Alabama	3,820	$ - -
Arizona	2,572	- -
Arkansas	274	- -
Connecticut	13,224	- -
District of Columbia	1,310	- -
Florida	9,620	71,709
Georgia	4,390	26,678
Idaho	691	- -
Illinois	15,274	- -
Indiana	2,102	- -
Iowa	4,930	- -
Kansas	8,141	- -
Kentucky	10	- -
Maine	4,637	- -
Maryland	6,516	- -
Massachusetts	14,449	- -
Michigan	11,835	- -
Mississippi	825	- -
Missouri	12,619	- -
Montana	346	5,152
Nebraska	12,621	- -
Nevada	810	- -
New Hampshire	38	- -
New York	5,952	- -
North Carolina	1,842	4,248
Ohio	5,191	6,206
Oklahoma	5,499	101,293
Oregon	5,205	- -
Pennsylvania	10,585	- -
Rhode Island	7,384	- -
South Carolina	1,327	5,421
South Dakota	4,213	- -
Tennessee	1,849	- -
Texas	6,472	- -
Utah	500	- -
Virginia	12,883	15,419
Washington	6,059	- -
West Virginia	104	- -
Wisconsin	2,393	- -
Wyoming	2,238	- -
Interstate shipments		18,888
	$210,750	$255,014

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE

CONTROL, ERADICATION AND PREVENTION OF FOOT-AND-MOUTH DISEASE

Obligations and Funds Provided as of November 30, 1954

Obligations	F.Y. 1947 - 1953 (Accumulative)	F.Y. 1954	F.Y. 1955 (as of November 30, 1954)	Total
Control, eradication and prevention activities:				
Payments made to the Mexican-United States Commissions for the Eradication and Prevention of Foot-and-Mouth Disease in Mexico	$56,083,399	3,520,236	$ 210,000	$ 59,813,635
Direct Federal expenses for program in Mexico	31,095,530	1,344,519	432,514	32,872,563
Enforcement of Mexican border quarantine	12,791,629	917,662	331,408	14,040,699
Inspection at public stockyards and in the field to detect immediately any possible introduction of foot-and-mouth disease into the United States	1,251,068	- -	- -	1,251,068
Short-term research on foot-and-mouth disease	905,186	- -	- -	905,186
Protective measures to prevent entry of foot-and-mouth disease from Canada	675,744	- -	- -	675,744
Total	102,802,556	5,782,417	973,922	109,558,895
Meat purchase program in northern Mexico:				
Purchase of canned meat and meat products in northern Mexico	56,173,509	- -	- -	56,173,509
Administrative expenses incident to meat purchase	443,534	- -	- -	443,534
Handling charges (canned meat)	3,314,335	- -	- -	3,314,335
Total	59,931,378	- -	- -	59,931,378
Interest on Funds borrowed from CCC	2,158,357	119,822	26,034	2,304,213
TOTAL OBLIGATIONS	164,892,291	5,902,239	999,956	171,794,486
Deduct: Application of gross receipts from sales of canned meat and from inspection fees	-36,916,018	- -	- -	-36,916,018
NET TOTAL OBLIGATIONS (NET OF RECEIPTS FROM SALE OF MEAT)	127,976,273	5,902,239	999,956	134,878,468

Funds Provided

By CCC:				
Gross transfers of funds	143,868,000	5,650,000	1,130,000	150,648,000
Interest costs on funds transferred, and handling charges, canned meat	5,469,223	119,822	26,034	5,615,079
Total	149,337,223	5,769,822	1,156,034	156,263,079
Transfers available in subsequent years	-292,262	/132,417	/159,845 1/	XXX
Net total	149,044,961	5,902,239	1,315,879	156,263,079
Less:				
Application of gross receipts from sales of canned meat and from inspection fees	-36,916,018	- -	- -	-36,916,018
Repayment of funds transferred from appropriations therefor	-59,400,000	- -	- -	-59,400,000
Cancellation of Commodity Credit Corporation Notes authorized by 1952, 1953, and 1954 Department of Agriculture Appropriation Acts and Public Law 295, approved February 12, 1954	-52,728,943	-333,224	- -	-53,062,167
Unreimbursed transfers	- -	5,569,015	1,315,879	6,884,894
BY APPROPRIATIONS AND CANCELLATIONS OF NOTES	128,033,943	333,224	- -	128,367,167
Net total funds provided	128,033,943	5,902,239	1,315,879	135,252,061
Unobligated balances:				
Net available in subsequent year--transferred to Treasury	-57,670	- -	- -	-57,670
Available as of date of report	- -	- -	-315,923	-315,923
Total	-57,670	- -	-315,923	-373,593
NET TOTAL OBLIGATIONS (AS ABOVE)	127,976,273	5,902,239	999,956	134,878,468

1/ In addition ,388 will be available from the unobligated balance under the program eradication of scrapie of sheep.

Statement of
Mexican-United States Commission for the Prevention
of Foot-and-Mouth Disease 1/

As of November 30, 1954

	Pesos		Pesos
Payments to the Commission:			
By the United States	34,676,953	2/	
By Mexico	2,400,807	3/	37,077,760
Less Expenses of Commission			33,707,708
Net:			
Cash (Less Mexican withholding tax, unclaimed wages, employees' bond deposits, and income and expenses on sale of liquidation property to be paid to the Mexican Government)	574,400		
Receivables	29,286		
Equipment	1,074,968		
Canning and rendering plant	1,691,398		3,370,052

1/ Because of variations in the rate of exchange this statement is made in pesos.

2/ Includes 136,328 pesos contributed from proceeds of sales of equipment owned by the Eradication Commission, excludes expendable property carried on the Commission's books at a value of 86,963 pesos.

3/ Includes 19,539 pesos contributed from proceeds of sales of equipment owned by the Eradication Commission.

RESEARCH

Current activities: Research on foot-and-mouth disease has been initiated in fiscal year 1955 on Plum Island, New York in facilities made available by the Department of the Army. This research was authorized by the Act of April 24, 1948 (21 U.S.C. 113a). All personnel at Plum Island employed by the Department under a working fund advanced by the Department of the Army in fiscal years 1953 and 1954 were retained for the current research program on foot-and-mouth disease. Thus it was possible to begin active research with the disease promptly in July 1954. The current research is limited in scope and is chiefly devoted to work on diagnostic methods. When the main laboratory facilities now under construction on Plum Island are completed, the research program will need to be expanded.

No increase is being included for fiscal year 1956 at this time because the date when the building program will be completed can not be accurately determined. The contract for construction of the new facilities was awarded in June 1954. It requires completion in 18 months, with extension permitted for delays because of change orders, difficulties which may be encountered in water transportation, rock formation interfering with construction, etc. In view of the possibilities of such delays, the facilities may not be available until early in 1956. When the completion date can be forecast with reasonable accuracy, it will be necessary to submit an estimate for additional funds to finance the full scale research program.

(d) Research Facilities

PROJECT STATEMENT

Project	1954	1955 (estimated)	1956 (estimated)
Facilities for research on foot-and-mouth and other diseases of animals	$7,895,455	$2,017,046	$38,525
Unobligated balance brought forward	-9,951,026	-2,055,571	-38,525
Unobligated balance carried forward	2,055,571	38,525	- -
Appropriation or estimate	- -	- -	- -

STATUS OF PROGRAM

The Urgent Deficiency Appropriation Act, 1952, provided $10,000,000 for the establishment of facilities for research on foot-and-mouth and other animal diseases. This was in addition to the unobligated balance of $456,823 available from the Second Deficiency Appropriation Act, 1949, which provided $500,000 for plans and specifications for such facilities.

A contract for $7,712,000 for construction of the main research facilities was awarded to the Stock Construction Company in June 1954 and a contract is being negotiated for power lines. Other facilities to be erected are those for receiving and holding large animals, breeding small animals, shelter of equipment, feed storage, enclosing existing sewage tanks, etc. The Corps of Engineers is supervising the construction work.

Construction of facilities will require from 18 to 20 months depending principally on difficulties encountered. Work has been slowed down to some extent by weather and rock formation encountered. It should be known with reasonable certainty by March 1955 when the construction can be completed and the enlarged research program undertaken.

(e) Working Capital Fund, Agricultural Research Center

This working capital fund is a continuing operating fund established by the 1951 Agricultural Appropriation Act in the amount of $300,000 to pay the operating costs of certain centralized services and facilities at the Agricultural Research Center pending receipt of reimbursements for such costs from the agencies provided with the services. The integrity of the original appropriation is maintained from year to year by means of these reimbursements.

Statements reflecting the assets and liabilities and income and expenses of the working capital fund as of June 30, 1954, as well as estimates for 1955 and 1956, are printed in the Budget schedules and in the Subcommittee Print for the fiscal year 1956.

STATEMENT OF OBLIGATIONS UNDER ALLOTMENTS AND OTHER FUNDS

(Includes only these amounts which, by November 30, 1954, were actually received or programmed for 1955 or 1956. Since work for other agencies is performed on a service basis, at the request of those agencies and for their benefit, it is not practicable to estimate in advance the amounts to be received in most cases.)

Item	Obligations, 1954	Estimated Obligations, 1955	Estimated Obligations, 1956
Allotments from:			
Flood Prevention, Soil Conservation Service - For economic analyses of flood control and comprehensive river basin surveys	$61,552	$30,705	- -
Allocations and Working Funds (Advances from other Agencies):			
Department of Agriculture:			
Soil Conservation Service - For economic analyses in connection with the Watershed Protection program	a/ 20,000	a/ 50,000	$100,000
Agricultural Marketing Service:			
To develop methods for estimating carcass composition of live meat animals	14,736	14,550	14,550
To determine the nutritional effect of drying unripe grains by different procedures	3,899	4,000	4,000
To develop methods and equipment for determining the quality of shell eggs	3,865	4,000	4,000
For identification and certification of superior meat-type hogs	13,910	22,500	22,500
For studies on pre-slaughter treatment of meat animals	- -	8,730	8,730
For study of the yield of dairy products from a unit quantity of milk	6,718	8,730	8,730
To make practical tests for determining the baking quality of milk solids	- -	19,400	19,400
For improvement of U. S. Grades of hay to increase nutrition value	10,760	10,670	10,670
To determine nutritional requirements of school feeding programs	19,983	30,000	30,000
Total, Agricultural Marketing Service	73,871	122,580	122,580
Commodity Credit Corporation - For research on farm storage of grains and related commodities	- -	44,000	- -
Total, Department of Agriculture	93,871	216,580	222,580

(Continued on next page)

Item	Obligations, 1954	Estimated Obligations, 1955	Estimated Obligations, 1956
Atomic Energy Commission - For accumulation and movement of fission products in soils and plants	83,906	65,000	65,000
Foreign Operations Administration - For expenses in connection with training, consultation, and technical assistance activities	603,891	808,448	- -
Department of the Army: Services for special projects	1,425,597	568,407	- -
For research related to the formation of rubber in Hevea trees	14,600	18,000	- -
For studies and research of current literature and reports dealing with plant diseases in other parts of the world	5,764	- -	- -
For studies on sweetpotatoes covering dehydration, handling, and related research	5,023	- -	- -
For research on the differentiation of microorganisms by infrared spectra	19,949	33,551	- -
For studies on synthesis of plant growth regulating derivations of amino acids and sugars, and carbonates evaluation	3,744	10,000	- -
For research on treatment of cotton as a substitute for silk in the manufacture of cartridge cloth	2,650	- -	- -
For research on the flameproofing of cotton textiles and the retardation of flaming and afterglow of cotton	28,725	25,744	- -
For research on emulsifiable oils and fats for use in intravenous alimentation	33,372	47,002	- -
For research in connection with the preparation of mammalian cholinesterase	7,253	- -	- -
To determine effect of various drying operations on the proteins and enzymes of bacteria	- -	35,165	- -
For study of the dehydration of fruits and vegetables	5,870	- -	- -
For studies relating to antigenic properties of certain fungus spores	5,023	7,977	- -
For investigations and the development of control measures on insects and other arthropods of importance to the Department of Defense	- -	33,808	- -

(Continued on next page)

Item	Obligations, 1954	Estimated Obligations, 1955	Estimated Obligations, 1956
Department of the Army - cont.			
For expenses incident to bringing dehydration handbook up to date	- -	10,000	- -
For research to determine the feasibility of procedures for dehydration of sweetpotatoes on a large scale comparable to production conditions	- -	9,000	- -
For meat inspection and grading services	- -	350,000	- -
Total, Department of the Army	1,557,570	1,148,654	- -
Department of the Air Force - For experimental investigations, studies, and tests in connection with the development of special scientific equipment	25,503	29,790	- -
Department of the Navy - For investigations and the development of control measures on insects and other arthropods of importance to the National Military Establishment	19,873	- -	- -
Department of the Interior:			
For chemical and physical analysis of soils and their relation to irrigation agriculture	4,036	2,338	- -
For research on sheep breeding	17,538	19,597	- -
Total, Department of the Interior	21,574	21,935	- -
General Services Administration -			
For research and survey activities relating to continuing and expanding abaca production in the Western Hemisphere	65,500	60,000	60,000
For production of seed	425	485	- -
Total, General Services Administration	65,925	60,485	60,000
Department of State - For quarantine services in connection with preventing the introduction of the Oriental fruitfly into Australia and New Zealand and purchase of guayule seed for the Empresa Nacional Calvo Solelo, Madrid, Spain	6,387	13,397	5,250
Total, Allocations and Working Funds	2,478,500	2,364,289	352,830

(Continued on next page)

Item	Obligations, 1954	Estimated Obligations, 1955	Estimated Obligations, 1956
Trust Funds:			
Miscellaneous Contributed Funds, Department of Agriculture - Funds received from States, local organizations, individuals and others in connection with work under cooperative agreements	140,713	149,385	139,600
Inspection of Animal Foods, Agricultural Research Service - For inspection and certification of animals foods	72,112	70,272	70,248
Expenses, Feeds and Attendants for Animals in Quarantine, Department of Agriculture - Expenses for feed and attendants for animals in quarantine	16,640	19,000	19,000
Technical Assistance, United States Dollars Advanced from Foreign Governments - For analysis of soil and water samples for other countries	1,385	- -	- -
Total, Trust Funds	230,850	238,657	228,848
Transfer from Commodity Credit Corporation			
For accelerated brucellosis eradication program in accordance with the the Act of August 28, 1954 (Public Law 690)	- -	12,700,000	15,000,000
Obligations Under Reimbursements From Governmental and Other Sources:			
Salaries and expenses:			
For meat inspection service furnished packers and other Government agencies	2,824,580	4,160,200	4,597,600
Other	891,254	1,118,956	1,210,920
Total, Salaries and expenses	3,715,834	5,279,156	5,808,520
All other	4,900	- -	- -
Total	3,720,734	5,279,156	5,808,520
TOTAL, OBLIGATIONS UNDER ALLOTMENTS AND OTHER FUNDS	6,491,636	20,612,807	21,390,198

a/ $20,000 received in 1954 and 1955 by allotment. These amounts shown under allocations and Working Fund for comparability purposes.

PASSENGER MOTOR VEHICLES

The 1956 Budget Estimates propose the replacement of passenger motor vehicles as follows:

Research

Replacement of 96, or 23.0 percent, of 418 passenger motor vehicles operated. These cars are used primarily by scientists at field stations for travel where no public transportation is available, such as to farms, ranches, cooperating experiment stations, commercial firms, etc., and to remote parts of stations covering a large area to check on conditions under which research is carried out. They are essential for making observations on cooperative research, collecting experimental data and specimens, and for efficiently expediting the conduct of the research work.

It is estimated that all cars to be replaced will either have mileage of more than 60,000 miles or will be 6 or more years old, and nearly all of them meet both of these conditions. Exceptions to meeting both standards are due to unusually heavy usage of a few cars less than 6 years old and to high operating costs due to extreme age and other circumstances for cars over 6 years old with less than 60,000 miles.

Plant and Animal Disease and Pest Control

Replacement of 204, or 24.6 percent, of 829 passenger motor vehicles operated principally in daily farm-to-farm travel in the control and eradication of tuberculosis, brucellosis, sheep scabies, cattle tick fever, and hog cholera. Some are operated in travel on plant disease and pest control work and a few on animal and plant quarantine work.

The rough rural roads over which much of daily farm travel is performed, in all kinds of weather, is very hard on cars. In order to keep them in safe and dependable operating condition, maintenance costs are high at best, but there is no alternative to continuing to use them because the testing and inspection work cannot be carried on without them. In most cases, employees who own cars are reluctant to use them for even limited periods because of the hard usage to which they are subjected in this work. The replacements recommended will make it possible for those cars to be replaced which are reaching the inoperable stage.

All cars to be replaced will have either mileage of more than 60,000 miles or will be 6 or more years old, and nearly all of them will meet both of these conditions. Exceptions to meeting both standards are due to unusually heavy usage or to high operating costs due to extreme age and other circumstances.

Meat Inspection

Replacement of 10, or 15 percent, of the 66 passenger motor vehicles used for meat inspection work. They are used in all States by

inspectors in visiting meat packing plants under Federal inspection located in metropolitan and rural areas throughout the country. For the most part plants are located where public transportation is infrequent or not available. The use of automobiles enables inspectors to cover inspection needs more efficiently and also saves personnel. For example, where one man with a car can cover two establishments 40 miles apart, without a car it would be necessary to have a man in each plant.

All cars to be replaced will have either mileage in excess of 60,000 or be more than 6 years old.

Working Capital Fund, Agricultural Research Center

Replacement of 1, or 16 percent, of the 6 passenger motor vehicles used at the Agricultural Research Center, Beltsville, Maryland. These vehicles are used primarily for transportation in supervising and inspecting the maintenance and operation of the Agricultural Research Center. Occasionally they are also used for transporting officials and visiting agricultural leaders to and from various sections of the Center.

The widely diversified research and regulatory activities and the varying nature of the areas in which cars are operated make it impractical to establish standards for car utilization on a mileage basis or on the basis of number of employees. Cars are a "working tool" to carry workers to the site of testing, inspection or observation work. Under meat inspection, one car is required for each inspector required to service two or more inspected meat packing establishments.

Age and mileage data for passenger-carrying vehicles as of June 30, 1954 follows:

Age Data			Mileage Data		
Age-Year Model	Number of Vehicles	Percent of Total	Lifetime Mileage (thousands)	Number of Vehicles	Percent of Total
1947 or older	238	18	Under 20	263	20
1948	209	16	20 - 40	299	23
1949	246	19	40 - 60	244	18
1950	122	9	60 - 80	225	17
1951	125	9	80 - 100	165	13
1952	106	8	Over 100	123	9
1953	234	18			
1954	39	3			
Totals	1,319 *	100		1,319 *	100

* Excludes 19 vehicles used in foreign countries.

The number of passenger vehicles (automobiles, station wagons, ambulances), including foreign vehicles, in use in fiscal year 1954 was reduced from 1,413 to 1,338, a reduction of 75 vehicles, or 5.3 percent.

In fiscal year 1955 one ambulance will be converted to a truck and no additions to the inventory are estimated in passenger-carrying vehicles except for the transfer of one ambulance and three buses at the Plum Island, New York, laboratory on foot-and-mouth research (transfer from the Department of the Army).

AIRCRAFT

Authority is requested for the emergency replacement only of one aircraft used by technicians in investigating and demonstrating the use of special equipment for suppression of destructive insects attacking crops. Planes rapidly become obsolete and uneconomical to repair and are subject to many mishaps. The replacement will not be made, however, if it is found practical and economically feasible to retain the present equipment.

EXTENSION SERVICE

Purpose Statement

The nationwide system of cooperative Federal-State extension work in agriculture and home economics is authorized and conducted under the Smith-Lever Act as amended by the Act of June 26, 1953, Public Law 83. Its function is to take research results, farm situation, and program facts of the Department of Agriculture and the State Agricultural Colleges and Experiment Stations and combine them into an adequate educational program which will effectively provide the means by which rural people can solve their own farm and family problems. The activities of the entire cooperative extension organizations are directed toward:

1. Insuring the economic stability of the farm family by maximizing their income through the application of technology resulting from research in agriculture and home economics. This is done by teaching the application of science in order to improve efficiency of farm and home operations, to develop and conserve natural resources, and to improve marketing methods.

2. Increasing the efficiency of market operations by bringing research findings to handlers, processors, wholesalers, retailers, and those engaged in transportation and storage; encouraging them to apply these findings to their operations; and expanding market information for consumers.

3. Improving family living through better housing and home facilities, use of labor saving equipment and methods, farm and home safety measures, and community development.

4. Improving health through better nutrition and sanitation and by more effective utilization of health and recreational facilities and services.

5. Assisting youth to understand the application of science to farming, homemaking and marketing through 4-H Club work and to train youth to accept their full responsibility as citizens.

6. Developing a better understanding of the many forces which occur off the farm which have a bearing on the economic and social welfare of the farm family and influence farming operations and home and community life.

The cooperative extension service is financed from Federal, State, county and local sources. These funds are used within the States for the employment of county agents, home demonstration agents, 4-H Club agents, State specialists and others who conduct among rural people the joint educational programs adapted to local application.

The Federal Extension Service, the educational arm of the United States Department of Agriculture, is responsible for administration, coordination and program leadership for the cooperative extension program in the 51

State and Territorial Extension Services including county extension offices in more than 3,000 counties. The Federal Extension Service, as a partner in the cooperative extension effort, is responsible for administering the provisions of Federal laws authorizing extension work; maintaining a modern, efficient and dynamic extension system in each State and Territory; coordinating the work among the States in cooperation with committees of State Directors; pioneering in new educational methods; evaluating the results of work performed; maintaining liaison with research, service, adjustment, and regulatory agencies of the Department; coordinating all educational work of the Department; and cooperating with other departments of government and private organizations in matters relating to extension education.

On November 30, 1954, there were approximately 13,500 State and county extension workers attached to the State organizations, and 224 Federal employees, 208 of whom were in Washington.

	Appropriated, 1955	Budget Estimates, 1956
Appropriated funds:		
Payments to States, Hawaii, Alaska, and Puerto Rico	$39,675,000	$45,475,000
Salaries and Expenses, Federal Extension Service:		
Administration and coordination	1,920,000	1,920,000
Penalty Mail	1,942,500	1,942,500
Total appropriated funds	43,537,500	49,337,500

Summary of Appropriations, 1955, and Estimates, 1956

Item	Appropriated, 1955	Budget estimates, 1956	Increase (+) or Decrease (-)
Payments to States, Hawaii, Alaska, and Puerto Rico	$39,675,000	$45,475,000	+$5,800,000
Federal Extension Service:			
Salaries and expenses:			
Administration and coordination	1,920,000	1,920,000	- -
Penalty mail	1,942,500	1,942,500	- -
Total	3,862,500	3,862,500	- -
Total, direct annual appropriations	43,537,500	49,337,500	+5,800,000

(a) Payments to States, Hawaii, Alaska, and Puerto Rico

Appropriation Act, 1955, and base for 1956	$39,675,000
Budget Estimate, 1956	45,475,000
Increase	+5,800,000

SUMMARY OF INCREASES AND DECREASES, 1956

To provide for additional State and county extension workers to carry on an expanded extension program including an intensified on-the-farm advisory service	+5,493,000
For additional educational work in marketing to meet urgent current problems	+395,000
Decrease due to shifting farm forestry extension work to the appropriation for the Smith-Lever Act, as amended	-88,000

PROJECT STATEMENT

Project	1954	1955 (estimated)	Increase or Decrease	1956 (estimated)
1. Payments for cooperative agricultural extension work under Smith-Lever Act of May 8, 1914, as amended by the Act of June 26, 1953 (Public Law 83)	$31,597,279	$38,662,000	$+5,493,000(1)	$44,155,000
2. Payments for cooperation in farm forestry extension work under Section 5 of the Act of June 7, 1924 (Clarke-McNary Act, as amended by the Act of October 26, 1949 (16 U.S.C. 568))	87,865	88,000	-88,000(2)	- -
3. Payments and contracts under section 204b-205 of the Agricultural Marketing Act of 1946 (7 U.S.C. 1623-1624)	535,000	925,000	+395,000(3)	1,320,000

(Continued on next page)

Project	1954	1955 (estimated)	Increase or Decrease	1956 (estimated)
4. Payments for assistance in farm housing under Title V, Section 506a, of the Housing Act of 1949 (42 U.S.C. 1476)	32,000	--	--	--
Unobligated balance	3,895	--	--	--
Total available or estimate	32,256,039	39,675,000	/5,800,000	45,475,000
Transfer in 1955 estimates from:				
"Agricultural Marketing Act, Agriculture"	-535,000			
"State and private forestry cooperation, Forest Service"	-87,865			
"Cooperative agricultural extension work, Extension Service"	-4,711,200			
Transfer in 1955 estimates to "Salaries and expenses, Federal Extension Service"	/243,982			
Total appropriation or estimate	27,165,956			

INCREASES AND DECREASES

(1) An increase of $5,493,000 to continue the expansion and intensification of the extension program.

Need for Increases:

a. The problems facing farm people in today's complex economy and technical nature of agriculture:

Risk in Farming are High: Farming today requires an average capital investment per worker of $20,000 - over twice as high as in industry. This large capital investment together with higher operating costs has greatly increased the risk of loss in farming and allows little room for errors in management. In 1940, farm operators' production expense was 6.6 billion dollars. In 1952 these expenses had increased to 22.9 billion. The farmer is in a cost-price squeeze. Production expense and outlays have increased 4 times above pre-war levels while gross income has increased less than $3\frac{1}{2}$ times.

Shifts in Agricultural Production are Necessary: Agricultural production has been geared to war and rehabilitation demands. Shifts in production are necessary to make the best use of land and other resources consistent with present effective market demand.

Application of Research Findings Slow and Not Adequately Correlated: It is estimated that the average lag between new agricultural research findings and their general application is 10 to 20 years. The application of research is slow at present because many farm families and those performing marketing services find difficulty in translating and applying new findings to their operations. To be most effective, the applicability of the findings of research to the many problems and needed adjustments on individual farms must be considered in relation to the individual farm as a unit.

Better Understanding of Agricultural Services Needed: Farmers seeking to solve the complex problems of today's agriculture are asking for counsel and advice to assist them to understand and utilize the program aids available to them.

b. Demands for Extension Assistance Exceed Resources:

County Extension Agent's Job Has Increased: Getting new facts and research results into the organization and operation of the farm is the basic job of Extension. During the early days of extension work agents could devote the major part of their time with individual farm families on their farms helping them translate research findings into increased efficiency of production and marketing of farm products. Now, the ever expanding numbers seeking their advice and help; the increasing complexities of modern farming; the variations and scope of the action programs about which all farmers need to be informed; and the coordinating and organizing work in each county, requiring county agent leadership, have so increased the demands on their time that needed and requested individual educational assistance often cannot be given. This is especially true in the majority of the counties in which there are only one or two agents.

County agents are expected to help inform farmers of changes in farm programs such as acreage allotments, marketing quotas, changes from year to year in the Agricultural Conservation Program practices and requirements, and the services available through Soil Conservation Service and Farmers' Home Administration. Farmers ask for assistance in organizing for rural telephone service or such activities as a grasshopper control program, a new soil conservation district, a new marketing agreement, or an intensified brucellosis control program. County agents attend and often help organize inter-USDA-agency meetings to improve coordination. Their cooperation is sought by Soil Conservation District supervisors or Agricultural Stabilization and Conservation Committees or Farmers Home Administration county committees in the development of a continuous educational program. They assist with the drought and other emergency programs. All this is a necessary

part of the responsibility for educational leadership. Because of these many and varied responsibilities which have gradually been added, Extension agents cannot adequately meet the educational objectives which are so clearly the responsibility of the Cooperative Extension Service.

Growth In Job Has Forced Too Much Reliance on Mass Communication Methods: The increased duties which have been thrust upon the county agents have to a great degree, forced them to depend largely upon mass communication methods. Radio, TV, news articles, meetings, large demonstrations and the distribution of bulletins are only a partial answer to the farmers or ranchers most in need of help. The farm family wants individual educational assistance in applying new information, improved farming methods, and management techniques to the increasingly complex and competitive business of modern farming, Hence those farmers who are both predisposed to change and more competent to apply new technology to their particular situations benefit most from these mass methods. Others, including many small and low income farmers, get further and further behind the advance in farm and home progress.

Extension Must Provide Educational Assistance to More Individual Farm Families: Further expansion of on-farm advisory assistance dealing with the whole farm as a unit is urgently needed and is being requested by farm leaders. The Cooperative Extension Service is facing the challenge of providing such as advisory service on a scale adequate to meet the needs of those farm families seeking such aid in their effort to solve the complex problems of today's agriculture.

Within the increased financial support made available for 1955 by the Congress and within the States, the Extension Services are making a significant start in bringing research results to bear more quickly on the solution of farm problems. It is being done by providing an intensification of Extension efforts, with an expanding force to give on-farm educational assistance to an increased number of farm families requesting such service. This involves counseling with farm families that they may analyze their own resources and abilities, and set family living and farm organization objectives. For those farm familites which can be reached with the available staff the farm unit approach results in their putting a sounder economic base under their farms and insures more nearly the optimum use of all farm resources.

Marketing Efficiency Must Be Increased Along With Production Efficiency: The development of an adequate educational program for agriculture must go beyond promoting efficiency and balanced production. It must also show the way to improvement in marketing of agricultural products. Only to the extent that research results are understood and put to use by those who perform the services and processess of distribution can farmers, distributors or consumers benefit from research in this broad area. The expanded educational marketing program should provide technical assistance, training, and

an on-the-spot problem-solving service to more of the 1,000,000 firms handling farm products thus providing the means for speeding and spreading the adoption of improved marketing practices. The resulting improved marketing efficiency will be reflected in less spoilage and waste, lower actual handling costs and higher farm returns.

4-H Club Work Should Reach More Rural Youth: Extension work with 4-H Clubs in training a competent, healthy, and clear thinking rural youth is an influential and extremely vital part of the Extension program. Sound and steady development of 4-H Club work should be actively encouraged as a great asset in the future progress of American life. Achievements through 4-H Club programs are impressive, but work in character development and citizenship training, as well as in teaching youth the application of scientific information to farm and home operations, needs to be extended to thousands of boys and girls not now participating in 4-H Club programs. The 4-H program has gradually grown to over 2,000,000 participants annually, but it is still far from the goal of reaching the estimated 10,000,000 rural youth that should be reached. Many of these are not now being reached because of a lack of professional staff to provide the educational leadership.

c. Increased Financial Support, Federal, State, and Local, Needed: State and local sources which in 1940 provided only 43 percent of the funds used by the Extension Services within the State, in 1955 are providing over 60 percent. Conversely the Federal support has dropped from 57 percent to less than 40 percent. State and local governments are continuing to increase their support; there was an increase of more than $3,500,000 in 1955 even though few State legislatures met this past year. This is further evidence that the Cooperative Program of the Extension Service is meeting a strongly felt need. Experience has domonstrated that the self help educational approach used by the Cooperative Extension Service can produce dramatic accomplishments in aiding farmers to solve their own problems. It is the American way for people to make their own decisions, but they need and expect the best available information if they are to make the right decisions.

Plan of Work:

The plan for extension work in 1956 is a continuation and extension of the 1955 plan. Additional manpower is essential to get research results quickly to more farmers and in use on their farms, especially on small and low income farms. Through direct contacts, this increased advisory staff would bring to more of these farm people in usable form the technical, economic, and farm program information needed to solve their individual farm and home problems and develop sound, long range management programs. Additional farm families would be provided with the assistance they are requesting to enable them to make changes in the organization of their farm businesses, to apply sound management practices and research results to the operations of their farm and family living. Additional educational assistance will be given in marketing. More leadership and training will be provided for 4-H Club work.

Even with the increase in funds made available in 1955, each county agricultural agent is attempting to service over 1,000 farm families, a number much too large for maximum efficiency and effectiveness.

The additional funds requested would be used largely for assistant agents, with such additional supervision, training and technical guidance as necessary to make the program most effective.

(2) A decrease of $88,000 due to shifting of extension farm forestry work to the appropriations for the Smith-Lever Act.

The work under this project will be continued at or above the current level, but for the purpose of providing more efficient and simplified administration it is proposed to merge these funds with funds appropriated under "Payments to States, Hawaii, Alaska and Puerto Rico," authorized by the Smith-Lever Act of May 8, 1914, as amended by the act of June 26, 1953, Public Law 83.

(3) An increase of $395,000 to expand marketing educational work on a matching fund basis and under contracts.

Need for Increases:

Marketing Efficiency Lags Behind Production Efficiency: Improvements in the marketing of agricultural products have lagged far behind improvements in agricultural production. Output per man-hour in marketing food products has increased only 30 to 40 percent since 1935-39, compared with about 100 percent in farm production per man-hour. Research and education has been a major factor in achieving the spectacular increase in efficiency of production and resulting cost reductions. The same opportunities exist in marketing. Expanded extension work in marketing would tackle head-on the reduction of unproductive costs associated with assembling, processing and distributing farm products.

Expanded Extension Education Can Bring About Marked Improvements: Research is continually developing improved market methods which can greatly reduce costs and wastes if they are understood and applied generally in the marketing processes. The Extension Service proposes to expand work with all groups concerned from the farmer to the consumer in getting these research results understood and applied. Only a small proportion of processors is now being reached. The Extension Service can speed up the application of research to the day-to-day operations of marketing organizations. Experience proves that work in this field offers as great an opportunity for improvement as that achieved in the field of production.

Consumer Education Important to Farmers: Many agricultural products cannot be made available to consumers in uniform supply throughout the year because of the seasonality of production. Consumers who understand seasonal variation in production and the problems of producing foods in sufficient quantity to meet their needs are more disposed to vary their consumption patterns to utilize foods in abundant supply and by so doing reduce or eliminate critical periods of over supply and depressed prices. A recent study shows that more than 140,000 consumers in Louisville, Kentucky are making use of the food

marketing information from this one Extension office. Additional educational work with consumers will help in increasing the use of and in stabilizing prices for agricultural products. Only a few consumer centers have this educational service.

Past Efforts Helpful but Inadequate: Real opportunities exist for effectively reducing marketing costs. As an example, research studies have shown that losses from bruises, cuts, poor conformation, discoloration, pin feathers, and poor condition results in downgrading chickens and turkeys with a consequent loss amounting to more than $100,000,000. An extension educational program in one state with producers, handlers and processors resulted in effectively reducing these losses in this state by approximately 50 percent. Similar improvements in marketing can be effected in other states and with many other commodities. Additional technical personnel are needed in order to carry out this work in more states and with other commodities and to enable more widespread application of improved techniques in marketing.

Farmers and Consumers will Benefit: The objective of Extension programs in marketing is to increase efficiency and reduce waste in assembling, processing, distributing and utilizing agricultural products. Increased efficiency and reduce waste would result in higher prices to farmers, lower costs to consumers, and increased profits to handlers.

Plan of Work:

Marketing problems are more complex and opportunities for improvement are greater in some States or areas than in others. The proposed increase under this activity is distinguished from that under the Smith-Lever Act by the need to provide funds for specific projects in a particular State or area which cannot be adequately financed from the more general distribution of funds under the formula set forth in the Smith-Lever Act. The proposed increase of $395,000 for fiscal year 1956 would permit State extension services to further expand and intensify marketing educational work by working with a larger segment of the trade, and to provide for further development of regional marketing information programs under contract. Of this total $340,000 would be used for State matching fund projects and $55,000 for contract programs.

CHANGE IN LANGUAGE

The estimates include proposed changes in the language of this item as follows (new language underscored; deleted matter enclosed in brackets):

For payments for cooperative agricultural extension work under the Smith-Lever Act, as amended by the Act of June 26, 1953 (Public Law 83), [$38,662,000; under section 5, Clarke-McNary Act (16 U.S.C. 568-568a)), $88,000] $44,155,000; and payments and contracts for such work under section 204(b)-205 of the Agricultural Marketing Act of 1946 (7 U.S.C. 1623-1624), [$925,000] $1,320,000; in all, [$39,675,000] $45,475,000: Provided, That funds hereby appropriated pursuant to section 3(c) of the Act of June 26, 1953 (Public

Law 83) shall not be paid to any State, Hawaii, Alaska, or Puerto Rico prior to availability of an equal sum from non-Federal sources for expenditure during the current fiscal year.

The proposed change in language deletes reference to the authorization for farm forestry extension work under Section 5 of the Clarke-McNary Act (16 U.S.C. 568-568a), for the purpose of simplification of administration. This work will be shifted to and become a part of that financed by appropriations made under the Smith-Lever Act.

PAYMENTS TO STATES AND TERRITORIES

Federal funds available for fiscal year 1955 for cooperative agricultural extension work within the States, Hawaii, Alaska, and Puerto Rico under the Smith-Lever Act as amended ($38,662,000), funds for farm forestry extension work under the Clarke-McNary Act ($88,000) and for carrying out the provisions of the Agricultural Marketing Act ($800,000 for payments to States and $125,000 for contracts) total $39,675,000.

Payments to the States and Territories are made directly to a designated officer in each State and Territory and the funds are disbursed by them in accordance with budgets and programs of work submitted by the State directors of extension and approved by the Administrator of the Federal Extension Service on behalf of the Secretary of Agriculture. As shown on Table 3 some matching by States and Territories is required by law before the funds become available. As reflected on Table 2, at present less than 40 percent of the cost of extension work is being financed from Federal sources and more than 60 percent from State and local sources. The funds are used by the States for the employment of extension workers to carry on cooperative agricultural extension work. Paid extension workers are being assisted by a network of voluntary neighborhood leaders who cooperate in carrying out extension programs.

The use of these funds is indicated in greater detail in the following tables. Table 1 indicates the distribution of the proposed increases and total proposed payments to States for fiscal year 1956 under the Smith-Lever Act, Public Law 83. Table 2 indicates the sources of funds allotted for cooperative extension work in the States, Alaska, Hawaii, and Puerto Rico for 1955 including allotments under the Clarke McNary Act and the Agricultural Marketing Act. Table 3 shows estimated direct payments to and contracts with the States and Territories for 1956 indicating those which require offset by State, county or local funds, those where such offset is not required, and the basis of allotment. Table 4 indicates the various classes of field agents employed with extension funds.

Table 1.

ALLOCATION OF FEDERAL FUNDS APPROPRIATED UNDER THE SMITH-LEVER ACT AS AMENDED JUNE 26, 1953, (PUBLIC LAW 83) FOR 1955, AND PROPOSED INCREASES AND TOTAL FOR FISCAL YEAR 1956.

STATES	ALLOCATIONS TO STATES EXCLUSIVE OF AMOUNTS DISTRIBUTED ON THE BASIS OF SPECIAL NEEDS		
	1955	PROPOSED INCREASE 1956	TOTAL PROPOSED FOR 1956
Alabama	$ 1,431,453	$ 181,887	$ 1,613,340
Arizona	193,961	23,791	217,752
Arkansas	1,177,975	144,310	1,322,285
California	928,028	160,158	1,088,186
Colorado	363,780	44,000	407,780
Connecticut	202,131	28,101	230.232
Delaware	106,082	9,191	115,273
Florida	447,524	69,512	517,036
Georgia	1,496,274	189,598	1,685,872
Idaho	275,284	33,274	308,558
Illinois	1,175,308	172,186	1,347,494
Indiana	975,649	143,975	1,119,624
Iowa	1,074,997	147,039	1,222,036
Kansas	743,479	89,357	832,836
Kentucky	1,388,594	189,549	1,578,143
Louisiana	937,148	116,566	1,053,714
Maine	265,030	34,467	299,497
Maryland	362,826	53,315	416,141
Massachusetts	277,678	43,670	321,348
Michigan	1,062,700	160,950	1,223,650
Minnesota	1,027,029	141,729	1,168,758
Mississippi	1,469,015	189,124	1,658,139
Missouri	1,225,823	162,402	1,388,225
Montana	279,657	29,831	309,488
Nebraska	624,969	74,115	699,084
Nevada	85,507	4,625	90,132
New Hampshire	143,426	16,085	159,511
New Jersey	274,687	42,823	317,510
New Mexico	249,729	29,871	279,600
New York	983,567	162,035	1,145,602
North Carolina	1,859,909	270,798	2,130,707
North Dakota	432,692	48,009	480,701
Ohio	1,319,430	201,741	1,521,171
Oklahoma	1,025,967	109,381	1,135,348
Oregon	375,192	56,993	432,185
Pennsylvania	1,274,498	219,161	1,493,659
Rhode Island	82,535	7,058	89,593
South Carolina	1,022,475	136,443	1,158,918
South Dakota	435,697	47,059	482,756
Tennessee	1,402,222	193,163	1,595,385
Texas	2,328,749	270,964	2,599,713
Utah	188,199	20,629	208,828
Vermont	180,458	19,797	200,255
Virginia	1,136,959	159,232	1,296,191
Washington	467,586	70,196	537,782
West Virginia	691,383	104,434	795,817
Wisconsin	1,015,850	144,484	1,160,334
Wyoming	152,570	12,792	165,362
Alaska	65,747	4,560	70,307
Hawaii	200,642	18,910	219,552
Puerto Rico	975,341	273,940	1,249,281
Total	$37,883,411	$5,277,280	$43,160,691
Amount available for distribution on basis of special need	778,589	215,720	994,309
Grand Total	$38,662,000	$5,493,000	$44,155,000

(1-55)

Table 2.

U. S. DEPARTMENT OF AGRICULTURE

FEDERAL EXTENSION SERVICE

SOURCES OF FUNDS ALLOTTED FOR COOPERATIVE EXTENSION WORK IN STATES, ALASKA, HAWAII, AND PUERTO RICO
FOR THE FISCAL YEAR ENDING JUNE 30, 1955

STATES	GRAND TOTAL	TOTAL FEDERAL FUNDS	TOTAL WITHIN THE STATES	FUNDS FROM FEDERAL SOURCES			FUNDS FROM WITHIN THE STATES		
				SMITH-LEVER ACT AS AMENDED JUNE 26, 1953	CLARKE-MCNARY FORESTRY	AGRICULTURAL MARKETING ACT* (TITLE II)	STATE AND COLLEGE	COUNTY	LOCAL NON-PUBLIC SOURCES
Alabama	$ 2,912,765.33	$ 1,452,662.57	$ 1,460,102.76	$ 1,431,452.57	$ 1,620.00	$ 19,590.00	$ 845,102.76	$ 615,000.00	$ -
Arizona	500,733.94	213,961.39	286,772.55	213,961.39	-	-	238,710.15	48,062.40	-
Arkansas	2,031,432.09	1,199,915.09	831,517.00	1,177,975.09	1,620.00	20,320.00	500,995.00	324,422.00	6,100.00
California	4,661,654.89	929,647.74	3,732,007.15	928,027.74	1,620.00	-	2,658,394.15	1,073,613.00	-
Colorado	1,231,436.89	416,623.89	814,813.00	408,779.89	1,260.00	6,584.00	401,625.00	413,188.00	-
Connecticut	697,474.15	210,690.87	486,783.28	202,130.87	1,620.00	6,940.00	266,584.28	203,232.00	16,967.00
Delaware	253,257.45	117,932.45	135,325.00	106,932.45	-	11,000.00	128,450.00	2,000.00	4,475.00
Florida	1,716,513.32	458,394.32	1,258,119.00	447,524.32	1,620.00	9,250.00	738,655.00	519,464.00	-
Georgia	2,973,868.90	1,507,988.90	1,465,880.00	1,496,273.90	3,240.00	8,475.00	763,307.00	702,573.00	-
Idaho	916,473.94	320,164.11	596,309.83	317,284.11	2,880.00	-	330,059.83	245,650.00	20,000.00
Illinois	3,521,496.14	1,193,688.14	2,327,808.00	1,175,308.14	3,240.00	15,140.00	893,558.00	12,000.00	1,422,250.00
Indiana	2,786,056.02	991,628.02	1,794,428.00	975,649.02	1,620.00	14,359.00	954,565.00	781,505.00	58,358.00
Iowa	2,931,802.39	1,115,557.39	1,816,245.00	1,074,997.39	3,060.00	37,500.00	835,000.00	575,880.00	405,365.00
Kansas	2,900,741.62	782,578.62	2,118,163.00	756,758.62	1,620.00	24,200.00	524,330.00	1,567,083.00	26,750.00
Kentucky	2,504,944.58	1,405,989.55	1,098,955.03	1,388,594.55	1,620.00	15,775.00	681,050.00	417,305.03	600.00
Louisiana	2,717,282.59	978,768.26	1,738,514.33	937,148.26	1,620.00	40,000.00	1,486,079.75	237,134.58	15,300.00
Maine	565,220.96	272,502.79	292,718.17	270,029.53	1,620.00	853.26	199,368.17	93,350.00	-
Maryland	1,457,675.79	390,045.62	1,067,630.17	362,825.62	1,620.00	25,600.00	867,425.17	200,205.00	-
Massachusetts	1,268,572.33	299,298.10	969,274.23	277,678.10	1,620.00	20,000.00	378,726.00	590,548.23	-
Michigan	3,489,440.50	1,135,022.90	2,354,417.60	1,062,699.57	3,240.00	69,083.33	1,744,968.60	575,349.00	34,100.00
Minnesota	2,104,000.45	1,039,568.94	1,064,431.51	1,027,028.94	3,240.00	9,300.00	457,247.00	607,184.51	-
Mississippi	2,957,637.38	1,495,417.38	1,462,220.00	1,469,015.55	3,240.00	23,161.83	775,000.00	643,175.00	44,045.00
Missouri	2,601,935.14	1,251,688.14	1,350,247.00	1,225,823.14	1,620.00	24,245.00	723,900.00	460,628.57	165,718.43
Montana	985,082.96	334,766.96	650,316.00	325,656.96	1,260.00	7,850.00	295,323.00	354,993.00	-
Nebraska	1,684,919.78	644,888.54	1,040,031.24	631,268.54	1,620.00	12,000.00	654,131.24	385,000.00	900.00
Nevada	280,910.38	123,706.65	157,203.73	122,506.65	1,200.00	-	78,878.23	78,325.50	-
New Hampshire	461,381.55	153,580.97	307,800.58	145,425.97	1,620.00	6,535.00	190,570.58	117,230.00	-
New Jersey	1,361,419.06	289,007.28	1,072,411.78	274,687.28	1,620.00	12,700.00	588,177.50	476,842.28	7,392.00
New Mexico	850,830.20	313,353.80	537,476.40	292,728.80	-	20,625.00	412,396.40	125,080.00	-
New York	4,958,584.13	1,019,807.50	3,938,776.63	983,567.50	3,240.00	33,000.00	1,789,054.63	1,899,926.00	249,796.00
North Carolina	5,205,145.20	1,885,229.48	3,319,915.72	1,859,908.98	1,620.00	23,700.50	2,077,415.72	1,242,500.00	-
North Dakota	1,008,323.97	484,711.97	523,612.00	469,691.97	1,620.00	13,400.00	188,000.00	335,612.00	-
Ohio	2,693,250.02	1,342,579.77	1,350,670.25	1,319,429.77	1,620.00	21,530.00	720,284.00	591,278.50	39,107.75
Oklahoma	2,371,306.72	1,080,160.72	1,291,146.00	1,025,966.72	1,620.00	52,574.00	953,576.00	337,570.00	-
Oregon	2,141,090.89	438,787.39	1,702,303.50	413,192.39	1,620.00	23,975.00	1,261,893.50	440,410.00	-
Pennsylvania	2,703,282.84	1,282,077.52	1,421,205.32	1,274,497.52	1,620.00	5,960.00	1,091,205.32	330,000.00	-
Rhode Island	198,713.38	85,847.38	112,866.00	82,535.38	-	3,312.00	90,369.00	19,800.00	2,697.00
South Carolina	2,084,870.83	1,027,102.53	1,057,768.30	1,022,475.03	3,240.00	1,387.50	917,037.50	134,250.80	6,480.00
South Dakota	1,120,417.27	474,567.27	645,850.00	468,697.27	1,620.00	4,250.00	433,840.00	204,110.00	7,900.00
Tennessee	2,577,210.44	1,422,242.44	1,154,968.00	1,402,222.44	1,620.00	18,400.00	751,686.00	402,152.00	1,130.00
Texas	4,988,757.06	2,344,324.26	2,644,432.80	2,328,748.89	1,620.00	13,955.37	1,020,870.02	1,622,262.78	1,300.00
Utah	645,184.11	241,484.11	403,700.00	228,199.11	1,260.00	12,025.00	287,700.00	116,000.00	-
Vermont	556,079.26	197,307.83	358,771.43	192,457.83	1,300.00	3,550.00	246,005.00	112,766.43	-
Virginia	3,049,530.04	1,162,895.04	1,886,635.00	1,136,959.04	3,240.00	22,696.00	1,488,037.00	398,598.00	-
Washington	1,539,066.94	508,143.42	1,030,923.52	497,585.92	1,620.00	8,937.50	580,300.00	450,623.52	-
West Virginia	1,257,687.81	696,102.81	561,585.00	691,382.81	1,620.00	3,100.00	382,620.00	174,665.00	4,300.00
Wisconsin	2,695,928.37	1,044,090.37	1,651,838.00	1,015,850.37	3,240.00	25,000.00	650,789.00	1,001,049.00	-
Wyoming	636,423.96	205,830.01	430,593.95	200,570.01	1,260.00	4,000.00	287,155.95	143,438.00	-
Alaska	148,515.00	65,746.52	82,768.48	65,746.52	-	-	82,768.48	-	-
Hawaii	589,105.21	210,642.12	378,463.09	200,642.12	-	10,000.00	378,463.09	-	-
Puerto Rico	1,716,358.63	1,010,960.63	705,398.00	975,340.63	1,620.00	34,000.00	705,398.00	-	-
Unallotted	280,319.55	280,319.55	-	280,158.84	-	160.71	-	-	-
Regional Contracts	125,000.00	125,000.00	-	-	-	125,000.00	-	-	-
GRAND TOTAL	$100,617,112.35	$39,675,000.02	$60,942,112.33	$38,662,000.02	$88,000.00	$925,000.00	$35,998,046.02	$22,403,035.13	$2,541,031.18

* - Preliminary Distribution

(9-54)

Table 3.--Statement of direct payments to and contracts with States, Hawaii, Alaska, and Puerto Rico, indicating those requiring offset by States and Territories, those not requiring such offset, and basis of distribution as estimated for 1956.

Item	Total Estimate, 1956	Amount to be paid without offset	Amount requiring offset and basis of allotment	
			Amount	Basis of allotment
1. Payments for cooperative agricultural extension work under Smith-Lever Act of May 8, 1914, as amended by the Act of June 26, 1953 (Public Law 83)...	$44,155,000	$14,513,808	$301,090	Specified by law 1/
			10,663,225	Rural population
			18,676,877	Farm population, except $994,309 2/ to be allotted by Secretary of Agriculture on basis of special needs.
2. Payments and contracts under section 204b-205 of the Agricultural Marketing Act of 1946 (7 U.S.C. 1623-1624).	1,320,000	180,000	1,140,000	3/
Total, direct Federal payments	45,475,000	14,693,808	30,781,192	

1/ Section 3 (b), Public Law 83 provides that Puerto Rico shall be authorized to receive the total initial amount set by the provisions of the Act of October 26, 1949 ($101,090) and this amount shall be increassed each succeeding fiscal year in accordance with such provisions until the total sum shall include the maximum amount ($401,090) set by the provisions of the Act of October 26, 1949. Under the 1956 budget estimate $301,090 will be paid to Puerto Rico under this provision.

2/ Of the $994,309 for special needs, $500,000 was authorized under the Bankhead-Jones Act, Section 23, for allotment to the States and the Territory of Hawaii on the basis of special needs due to population characteristics, area in relation to farm population, or other special problems, as determined by the Secretary. This provision was retained in Section 3 (b) of the Smith-Lever Act as amended. Also under Section 3 (c) 1 of the Smith-Lever Act, as amended, 4% of any amount appropriated persuant to this section is allotted to the States, Hawaii, Alaska and Puerto Rico on the basis of special needs as determined by the Secretary. This amount will be $494,309 under the proposed budget for 1956.

3/ Distribution to States based on annually approved cooperative projects for marketing service and regional marketing contracts.

Table 4.--Extension field agents employed June 30, 1951, 1952, 1953, and 1954.

	June 30, 1951	June 30, 1952	June 30, 1953	June 30, 1954
State supervisors	784	788	787	797
Subject-matter specialists:				
Full-time specialists	1,697	1,694	1,709	1,736
Part-time specialists	551	512	486	520
Total specialists	2,248	2,206	2,195	2,256
Total with headquarters at colleges	3,032	2,994	2,982	3,053
County workers:				
Agricultural agents	4,910	4,866	4,940	5,012
Home demonstration agents	3,261	3,285	3,290	3,283
Boys' and girls' club agents a/	652	645	617	560
Negro extension agents	787	803	795	804
Total county workers	9,610	9,599	9,642	9,664
TOTAL	12,642	12,593	12,624	12,717

Number of agricultural counties in the States, Hawaii, Alaska, and Puerto Rico ... 3,108
Number of agricultural counties now having one or more agents 3,062

a/ These are special 4-H Club workers. In the majority of States, Alaska, Hawaii, and Puerto Rico, 4-H Club work is conducted by county and home demonstration agents and their assistants.

STATUS OF PROGRAM

General: Cooperative extension work is carried on by the United States Department of Agriculture, in cooperation with the State Land-Grant Colleges, and county governments. Jointly employed county agricultural, home demonstration, and 4-H Club agents work with farm people and other groups by making available information on research, economics, farm policies, and other related subjects, and by helping them to apply scientific knowledge in agriculture and home economics which is locally applicable. As the educational link in this beyond-the-classroom type of education the Extension Service has supporting it the total research facilities of the Department of Agriculture and the State agricultural colleges and experiment stations. The basic objective of extension work is to help people increase their technical and managerial skills in farming and homemaking and thereby improve their economic status and family and community life.

The costs of this cooperative program are shared by Federal, State, and county governments. Federal funds in the fiscal year 1955 contribute 39.4 percent. State government contribute 35.8 percent and county and local sources provide the other 24.8 percent.

Selected Examples of Recent Progress: Satisfactory progress has been made in the recruitment of additional Extension personnel in the States for the expansion and redirection of the Extension program. It was estimated that 1056 additional Extension workers could be employed with increased appropriations for fiscal year 1955. Up to November 1, 1954, 762 had been employed, and it is estimated that the 294 additional Extension workers will be employed by January, 1955. State reports indicate that a very high proportion of these additional workers are devoting their time directly to the farm and home unit approach program, or are carrying on regular extension activities permitting the established county agent to devote his time to the farm and home unit program.

1. Four Million Farm Families Assisted: County agents indicate the total number of farm families assisted by extension work during 1953 at approximately 4,000,000. In reaching these large number of people on ever broadening and more complicated problems, extension agents used many methods -- meetings, on-farm contacts, assistance of local leaders, publications, radio, news, visual aids and letters. They trained over 1,000,000 volunteer local leaders to assist with programs for adults and youths. They made more than 20 million personal on-farm visits, office and telephone calls.

2. 4-H Club Work Advanced: 4-H Club work influenced the lives of 2,058,144 members of the 4-H Clubs in 1953. Compared to one year ago the enrollment in 4-H Clubs has increased 40,000 members. County Extension agents reported that there were 256,524 voluntary adult

leaders and 91,786 junior leaders cooperating in the conduct of 4-H Club work. The training of volunteer leaders by the State extension services is the primary method of spreading the influences of extension education to an increasing number of the people of the nation.

4-H Club members completed a total of more than three and a quarter million 4-H Club projects. These projects are designed to develop skills in agriculture and related subjects, wholesome attitudes, stronger character, and an appreciative understanding of the basic values of the American way of life. The trend has been to emphasize family-centered projects. Through 4-H project teaching, the Extension Service helps to localize the findings of scientific research. Extension served an additional 371,046 young men and women whose interests and needs matured beyond the 4-H Club age, with an educational program designed to help young people select and become established in vocations, and to prepare for positions of leadership.

3. Nearly Two Million Farmers Improved Grasslands: The nation's Grasslands continue to hold the wide interest of farmers, business and professional leaders. With one-half the land area of the United States devoted to grass, it continues to be the largest crop in the nation. Almost two million farmers were assisted by Extension workers to adopt recommended practices in grassland farming (hay, pasture, and range) in 1953. The principal areas of assistance included improved varieties, use of fertilizer and lime, control of insects, diseases, weeds, and rodents, as well as renovating, reseeding pastures, and livestock management to make the best use of grass and hay from grassland.

4. Progress in Farm Unit Approach - North Carolina: The farm today is a business that is family operated, family managed, and family financed. In order to be an economically successful enterprise, the various elements that go into the operation of farm and home must fit together smoothly.

As farming has grown more complicated, solutions of the resulting problems must be worked out where they originate -- on each individual farm, which points to the importance of the unit approach -- a method that helps individual farm families to analyze their problems more thoroughly and to make wise decisions, taking into account such factors as economic trends, the family's needs, desires, opportunities, resources, and experience.

The farm and home unit approach as a method of doing Extension educational work is not new. One example demonstrates what can be done by farm families in a space of 13 years when the full scientific resources of the Department of Agriculture and Land-Grant Colleges are made available to these families through the farm and home unit approach.

In 1940 Clay County, North Carolina, was known as a poor mountain county, - as a No. 1 problem county, agriculturally. It had 370 families on public welfare rolls. Its churches, schools, roads, and other community facilities were in the state of repair that a per-farm cash income of $92 a year would suggest. Clay County's farms produced only corn, wheat, rye, hay and pasture. Corn averaged 18 bushels an acre; yields of other crops were correspondingly low.

Four experienced workers -- two men and two women -- were put to work in Clay County. These agents used the "family approach." In every sense of the word the agents gave on-the-farm assistance. The approach to Clay County's problems was studied and agreed upon jointly by farm and Extension people. Then the farm families in each of the county's 13 communities were assisted with farm and home development programs. Progress was reflected in homes and communities and living. There are now dependable marketing facilities for milk, eggs and chickens. Clay County can boast of quite a few facts and figures that reflect its present state of prosperity:

	1940	1953
Annual income per farm	$ 92	$1,870
Families on public welfare	370	1
Bushels of corn per acre	18	32
Number of hens	30,000	170,000
Homes with running water	92	630
Homes with bath	36	293
Refrigerators	55	660

5. Farm Progress in Unit Approach - Georgia: In the spring of 1954, county extension staff, district agents, and management specialists explored how Extension work could be expanded to more adequately assist farm families apply the results of science and technology to their own situation. A State extension committee was appointed to help develop procedures, methods and materials for the farm and home unit approach in the State. It was determined that there would be 6 demonstration counties set up in the State and that additional agents would be placed in those 6 counties on the basis of 1 agent for each 300 families. Criteria for the selection of the counties required (a) a good program already under way, (b) that agents have some tenure in the county, (c) that the people be responsive, (d) that the county be willing to put up its share of the money.

A State wide meeting was held of all agencies and organizations that should be informed about the development of this intensive method of work in Extension. A similar meeting was held in the demonstration counties. These meetings helped clarify what the people wanted done, what Extension was proposing to do, and encouraging cooperation of all agencies in the process .

A county committee then proceeded to select families, including low income group, young couples and others. At present the agents are working intensively with these families in the matter of helping them make an inventory of their resources and in making decisions about their goals.

This is a typical example of many States where the counties are set up more as pilot or demonstration counties -- where they are trying to establish the right sort of pattern out of which to meet experience and further expansion of the work in succeeding years.

6. On-Farm Assistance Pays Off: There has been intensified interest and increased activity on the part of the States to develop educational procedures for providing effective on-farm assistance. Increasing evidence of results is available. In Colorado, for example, extension agents have been working with ranchers to help them increase their efficiency and thereby avoid unprofitable operations in the face of declining cattle prices. One example of this is the accomplishments of Treetop Ranch during the period 1950-52. A comparison of the situation in 1950 with that in 1952 follows:

	1950	1952
Number of cows	1830	1044
Number of bulls	69	42
Number of bulls graded A	0	0
Number of bulls graded B	5	18
Number of bulls graded C	20	20
Number of bulls graded D	44	4
Percent of calves grading choice	8.5%	27.7%
Percent of calves grading good	52.7%	61.3%
Percent of calves grading medium	30.0%	10.0%
Percent of calves grading commercial	8.8%	10.0%
Weaning weight of calves, lbs.	318.4	373.7
Total calves weaned	645	830
Sales of weanings	75%	80%

Sales Average per cwt.

Number of calves sold	484	665
Total value, calves sold	$50,118.24	$58,014.68

The total value of calves sold in 1952 was 16 percent larger than it was in 1950, in spite of the fact that in 1952 steer calves brought only 75 percent as much per pound and heifer calves sold for only 85 percent as much per pound as they did in 1950. Meanwhile the capital invested in the breeding herd had been reduced by culling 1,830 cows to 1,044 and the number of bulls from 60 to 42.

Figures are not yet available for 1953, but a 1953 drought report from Colorado refers to this ranch as follows: "The program has now been in operation for nearly four years and they are producing more pounds of beef and of a higher grade now from half

the number of cows that were in the herd four years ago. They have saved a lot of grass and a pasture inspection July 19 (1953) showed that they will not be short of grass this year if they get just a few showers."

7. Report on Individual Farm Planning in Indiana: Following the first two years' work in Indiana on individual farm planning, a survey was made by county agents to measure progress. Practically every farmer in the program made at least some change in his business as a result of this work.

A table of key items brought out by the survey is shown below.

Selected Items taken from the Summary of Individual Farm Planning in Indiana

	Northern Indiana	Central Indiana	Southern Indiana	State Totals
Number of Farmers	220	264	55	539
Adjusting Cropping Systems to Land Resources	87%	78%	87%	83%
Improving Field Lay-Out	71%	65%	74%	70%
Using More Fertilizer	69%	74%	80%	75%
Adjusting Kind and Amount of Livestock to Feed, Labor and Capital	94%	86%	95%	91%
Building Arrangements and Remodeling	81%	79%	88%	83%
Average Cost of Changes	$2700	$3000	$1900	$2500
Years Required to Make Changes	3.1	3.2	3.3	3.2
Estimated Improvement in Income	29%	24%	45%	29%

8. Case Report of Individual Farm Planning in Vermont: Two brothers were faced with a problem common to many Vermont dairymen. Their business had outgrown their buildings. Large holstein cows producing better than 10,000 pounds of milk were crowded into three-foot stalls and awkward pens. The obvious solution to their problem was a new barn. They were prepared to invest 10 to 15 thousand dollars , their life-long savings for this purpose.

The county agent learned of their plans and when he suggested that they do some careful planning before investing all their savings in a new barn, the brothers expressed much interest in what might be done. All significant factors were considered in developing their farm plan.

The farm included 288 acres of farm land, 109 acres of improved and native pasture, and 188 acres of woodland with approximately one million feet of pine and maple. Their herd included 61 milkers, 2 bulls, and a large number of excellent heifers -- 48 head of replacement stock.

The main problem centered about providing adequate facilities for housing the livestock on the farm plus facilities for housing additional milkers. More cows were needed to utilize land and machinery more effectively; and through higher rates of fertilization better roughage provided for the entire herd.

Plans were developed for improving the crop and livestock program. The idea of building a $10,000 - $15,000 barn was abandoned. Comfortable, efficient housing in an attractive building was provided through detailed plans to tear down one delapidated structure, to remodel another, and to construct an ell 70 by 36 feet.

Ten months have elapsed since the initial plan was developed. Construction of a new one-story hip roof barn is nearly complete at a cash cost of $4,000 - remodeling the old barn to be completed in September will cost another $1,000. Young cattle freshening this fall will fill them both. A big silo has been built in anticipation of enlarging the business to 70-80 milkers.

Needless to say 10 months isn't long enough to measure results. The physical progress has been excellent, however, and perhaps of more importance, the family plans with the whole family and farm situation in mind.

9. Land Use Adjustments Suggested: In North Dakota to ascertain probable use of diverted acreage, a one percent survey of farmers was made by county agents. To offset a natural desire of farmers to seed barley and flax, emphasis was placed on fall-seeded rye and as a result rye acreage was increased about 50 percent. A joint Experiment Station-Extension Committee developed suggestions for use of diverted acreage.

10. Demand for Assistance in Pest Control Increased: About 17% of all the questions asked county agents related to insects and their control. During the growing season this increased to almost 40%. Assistance was given farmers in response to approximately 10 million requests in the control of insects, plant diseases, and weeds. Several billion pounds of pesticides were used by the farmers and Extension workers had an active part in helping in the safe, effective, and economical use of these chemicals. This service saved the American public, especially farmers, several billion dollars. Insect control alone saved $56,000,000 for farmers in the State of Alabama.

11. Cotton Ginning Assistance Proved Effective: A measure of the accumulative effect of the widespread intensive educational program in cooperation with the U.S.D.A. Cotton Ginning Laboratories and the cotton ginning industry is the remarkable nation-wide reduction in rough gin preparation. For the five years 1942-46 for the entire cotton crop of the United States the percent of cotton reduced in grade because of rough gin preparation was an average 7.3 percent annually. For the years 1947-50 rough gin preparation was reduced to an average of 3 percent annually and for the three years of 1951-53 the average belt-wide record for rough gin preparation has been under 1 percent

annually. During these years mechanization has increased to the extent that 22 percent of the 1953-54 crop was mechanically picked or stripped, about 21 percent hand-snapped and 57% hand-picked. The belt-wide improvement in ginning in spite of mechanization is a phenomenal achievement of the cotton ginners. They have requested educational assistance from extension services for the best selection of equipment and operation of modern cotton ginning plants to meet the competition of synthetic fibers in comparable spinning quality, and to overcome the handicaps imposed by the steadily increasing volume of moisture and trash in seed cotton. This year a program is underway to reduce damage to the spinning characteristics of cotton from the removal of too much moisture and "over-machining" in the cleaning processes of ginning mechanically harvested, hand-snapped and rough hand-picked cotton.

12. 4-H Club Instructed in Tractor and Machinery Maintenance: During the past 10 years expansion in use of farm power machinery has been enormous. There are now only one-fifth as many work animals on farms as there were in 1915 when the population of the United States was 100,000,000 people. 4-H Club members are taught proper operation and maintenance of tractors. In 1953, 67,043 members enrolled in this project. These 4-H Club members have assisted in encouraging the proper use and maintenance of tractors and farm equipment on their farms.

13. Training and Demonstrations of Forestry Practices Conducted: Farmers, loggers, sawmill operators, bankers, and other forest owners are showing increasing interest in the application of forestry practices as a means of increasing the income from forest lands. Extension workers are meeting the resulting need for information by scheduling short courses in forest management and naval stores production; by conducting sawmill training schools and loggers' meetings; and by holding forestry clinics for bankers. These training methods are being supplemented by demonstrations showing recommended forestry practices.

Interest in tree planting continues on a high level with farmers planting approximately half of the 435 million trees distributed by State nurseries last year. This work has been expedited by the use of tree planting machines which Extension agents assisted in making available to farmers. In planting of trees for timber products, windbreaks, shelterbelts, erosion control, and Christmas trees, Extension assisted 175,000 farmers and reached others through meetings, the press, and the radio.

More than 135,000 farmers who received assistance took part in woodland management and timber harvesting practices. Demonstrations of power equipment for carrying out forest operations continue to be of great interest. The chemical killing of inferior hardwoods and chemical peeling of pulpwood are newer practices which are finding a definite place in management and utilization work. Assistance with the preservative treatment of fence posts and other wood products was given to 57,000 farmers and 53,000 were aided in the marketing of forest products. Extension agents cooperating with State Forestry Departments in forest fire prevention, assisted 293,000 farmers with protection problems.

14. Successful Campaign for Expansion of Grain Storage Conducted: Large grain crops and stocks carried over from previous years caused a critical grain storage problem in 1953 and 1954. The Department of Agriculture, in cooperation with Land-Grant Colleges and trade groups outlined a program at a national grain storage conference at Omaha in March, 1954, designed to help farmers build more storage and to expand both commercial and Commodity Credit Corporation storage. Extension was asked to lead in a national educational program to explain to farmers, elevator operators, and others the storage problem, the availability of government programs to help expand farm and commercial storage and to disseminate the latest research results in constructing facilities and keeping grain in condition.

In 1953 farmers built about 33 million bushels of storage under government programs. In the first six months of 1954 the Commodity Credit Corporation made farm storage loans covering 22.4 million bushels of additional space. This compares with loans covering 6.9 million bushels in the first six months of 1953. These figures indicate that total farm storage built in 1954 will be considerably greater than the amount in 1953.

The 1953 and 1954 programs in Oklahoma indicate how farmers and the grain trade responded to the need for increasing grain storage capacity. At the end of the 1953 harvest Oklahoma had 123 million bushels of storage space. Realizing that the 1954 situation would be acute unless additional space was provided, extension developed plans at the end of the 1953 harvest to encourage farmers and grain dealers to build more storage. Through a concentrated program growers were familiarized with the supply, demand, and storage situation. At the beginning of the 1954 harvest, storage space had been increased by 41.5 million bushels over the previous year.

15. Cotton Marketing Program Increased Income of New Mexico Producers: Beginning in 1948 the New Mexico Agricultural Extension Service started a program on cotton bale identification under the Agricultural Marketing Act. The purpose of the project was to improve market reputation and acceptance of superior quality cotton grown in New Mexico by identifying individual bales according to variety and location of growth.

In 1948 about 90 thousand bales were identified. Since that time the number of bales has increased to a total of 230 thousand bales in 1953, or 70 percent of the crop. Increased price premiums during this time have ranged from $10 to $25 per bale, average $15 for the entire period. On this basis, the lint identification has resulted in increased income to producers, amounting to 53 million dollars.

16. New Mexico Wool Producers' Income Increased $750,000: In the past year over 375,000 stock sheep, or 4 out of 10 sheep in the State of New Mexico, were known to be classed under the wool length-for-grade breeding and wool marketing programs. This work was done on 175 ranches from every range sheep county in New Mexico exclusive of Indian reservations. These program-improved sheep sheared 4,350,000 pounds of wool, or 11.6 pounds grease fleece weight; whereas 675 thousand non-Indian sheep, not known to be classed for wool improvement, sheared an

average of only 8.4 pounds. The wool from the improved sheep sold for 56 cents, average net price, in 1953 while unimproved wool sold at an average net price of 51 cents. Hence, those sheep under improvement and marketing project work returned $6.45 per head shorn in wool sales as against $4.28 wool returns from sheep not under an improvement program -- a difference of over $2.00 per head. Thus, New Mexico's sheep economy benefited by more than $750,000 in 1953 through the upgrading of 375 thousand sheep. Increased length through breeding and better preparation plus market labeling of improved clips contributed to their higher selling price. The state-wide industry can gain $1,250,000 at present wool price levels through expansion of the classing and marketing programs to two out of every three ranches not presently under such project work. A further boost in wool returns of more than $500,000 also can be gained through gradual upgrading of lower producing Indian sheep to the present production level of improved herds. Furthermore, this overall increase of income can be achieved with a minimum of labor and expense through additional extension effort.

17. Many Cooperatives and Farmer Members Assisted: In 1953, extension workers assisted 6,413 marketing and purchasing cooperatives, with a membership of 2,138,600. Extension has assisted, through education, in forming cooperatives in fields such as artificial insemination. Particular attention has been given to improving the efficiency of going concerns through educational work on improved practices in accounting, financing, handling, and merchandising.

18. Consumers Respond to Educational Programs: Food marketing information programs guide consumers to greater use of recommended foods. Farmers benefit from the increased demand. For example, in 1953 consumers increased beef consumption by 15 pounds per capita. The use of extension educational materials made a substantial contribution in bringing about this 25 percent increase in beef consumption. Four regional and sixteen State programs are now in operation.

19. Farmer Participation in Public Policy Stressed: For a number of years the Extension Service has been doing educational work on various issues of a public nature to help people make group decisions on the basis of a careful consideration of the problem, the alternative solutions, and the results that might follow from different courses of action. Many of these problems were State and local in nature, but required group action and often new legislation.

In recent years an attempt has been made to broaden this educational work by giving more emphasis to local discussion of national and international issues on which public policy is being formed. By developing a better understanding of these issues and the proposed solutions, and by encouraging people to take an active interest in registering their thinking through farm and civic organizations, the value of group participation in policy making has been greatly advanced.

20. Home Management: Back of every good farm is a good farm home, united in support of the major family undertakings and managed in such a way that both the farm and the home contribute to the ultimate achievement of an economically sound and socially stable agriculture. Home management, like farm management, requires fundamental knowledge to clarify the facts from which major decisions can be made in relation to the wise use of total family resources -- money, time and strength -- to obtain a living satisfactory to the family. Approximately 3,500,000 women participating in the home demonstration programs are studying home management.

21. Extension Work Improved Living in Mississippi Community: When extension work started in the Farmhaven community of Madison County, Miss., in 1930, homes were mere cabins. None had screens, electricity or radios. Some families canned a little fruit and vegetables but none preserved meat. Few children attended school -- 18 miles distant.

Extension work was started there with the organization of a homemakers' and 4-H Club. Today every home is screened and most have electricity and radios. Fourteen homes have hot and cold running water and bathrooms. Twelve families have home freezers, 31 have remodeled their homes, making separate rooms for adults and children, 34 have year-round gardens, five have television sets.

From this community came the first negro girl ever to visit Washington and tell over a national radio network what 4-H had done for her. As a club member, she installed running water in her home at a cost of 15 cents for a faucet - using an old drum for water storage, a gas tank for a sink, and a steering wheel casing for drain pipe. She made the dress she journeyed to Washington in from feed sacks, and remodeled her room using materials at hand and skills learned as a club member. Eleven girls from this community now make their living sewing. Through club work, one girl won a scholarship to college and now has her own upholstering business. Seventeen former 4-H'ers are teachers and many others are successful homemakers and farmers.

22. Healthier National Food Habits Aided by Extension Programs: The average American is eating more meat, milk, eggs, citrus fruits, tomatoes, leafy green and yellow vegetables, and fewer potatoes and cereals than in prewar days. Extension programs throughout the country have given added emphasis to the inclusion of foods in the diet which will include calcium, Vitamins A, and protein, and fruits and vegetables which are high in Vitamin C and Vitamin A as well. This change has been made possible by increased farm productivity and the effectiveness of the food industry and marketing system in making food products widely available throughout the country at all seasons. Over 3-1/4 million families were helped with their food problems during 1953.

23. South Dakota Poultrymen Improve Egg Quality, Production and Marketing: Prior to 1950, South Dakota eggs were "docked" in price because of inferior quality. In 1950 they brought the lowest price of any marketed

in the 7-State West North Central region. Three years later, as a result of an intensive extension educational program on the production and marketing of quality eggs, South Dakota eggs averaged .7 cents per dozen more than the 7-State average egg price.

Total price increase during this period was 11.5¢ per dozen compared to an area increase of 10.8 cents, and each 1-cent-per-dozen price increase gave producers an additional million dollars return. Rate of lay increased 13 eggs per bird during the 3-year period as a result of better breeding, feeding, and management.

24. Weed Control Saves North Dakota Farmers 20 Million Dollars Annually: North Dakota farmers are saving an estimated 20 million dollars annually through weed control practices established with the help of the cooperative extension service.

Approximately 500,000 acres of flax and more than 2 million acres of small grains were treated for weed control last year.

25. Extension Helped California Farmers Divert Cotton Acres Into Profitable Production: What to do with diverted cotton acres was the big problem facing many California farmers in 1954. One county, Tulare, took a 29 percent cut in acreage. This meant farmers had to shift 70,000 acres into other crops. This was no small task in an area where cotton and nearly all other crop production depends upon irrigation. And irrigation, land, and equipment investment is high. Farmers couldn't afford to let their land lie idle so the problem was to grow crops that fit this type of agriculture.

To help farmers meet the emergency, extension workers organized themselves into task forces to better deal with various possibilities for alternative crop and livestock production. They utilized all the information and help available from the University of California and the U. S. Department of Agriculture. They prepared in ready form all the cost studies and surveys made in the county so farmers would know probable production costs of various crops. They issued county publications, organized tours, held meetings, worked on hundreds of farms, and made use of every means for presenting facts about alternatives.

The fact that Tulare County farmers alone shifted 69,928 acres from cotton into other crops this past year speaks of the effectiveness of the program. Many farmers found the diverted acres program opened new possibilities for production they had never considered before and to which their farms were well-fitted.

26. Good Farm Management Helped Avert Drought Disaster in Missouri: In spite of two years of drought, Missouri farmers practicing good farm management were able to meet the 1953 drought emergency with little outside help. Figures from 7 Lawrence County farms -- located in the heart of the drought area -- show how a good farm plan can help meet adversity.

The 7 farms averaged 155 acres, of which 115 were cropland. Each had a deep well plus 1 to 3 ponds for livestock water. All were dairy farms, averaging 20 cows per farm with enough replacement heifers to bring total animal units to 29.

Barley yields averaged more than 50 bushels, wheat nearly 30, and oats more than 40 bushels per acre. Grain production exceeded 2000 bushels per farm. Hay production averaged 23 tons and silage production 100 tons per farm. Although each of the farmers had to start feeding roughage early in the summer, feed shortages averaged only 25 to 30 tons per farm. In contrast, most Missouri farmers not practicing balanced farming were out of feed long before the normal winter feeding period started and had to rely upon freight-free hay and emergency feed supplies to carry them through the winter.

(b) Salaries and Expenses, Federal Extension Service

	Administration and Coordination	Penalty Mail	Total
Appropriation Act, 1955	$1,925,000	$1,942,500	$3,867,500
Activities transferred in the 1956 estimates to "Salaries and expenses, Office of Information, Agriculture" for news-type photographic services	-5,000	- -	-5,000
Base for 1956	1,920,000	1,942,500	3,862,500
Budget Estimate, 1956	1,920,000	1,942,500	3,862,500

PROJECT STATEMENT

Project	1954	1955 (estimated)	1956 (estimated)
1. Coordination, administration, and program leadership of cooperative extension work	$1,302,009	$1,920,000	$1,920,000
2. Penalty mail for cooperative extension agents	1,215,688	1,942,500	1,942,500
Unobligated balance	512,093	- -	- -
Total available or estimate	3,029,790	3,862,500	3,862,500
Transferred pursuant to Public Law 286 from:			
"Salaries and Expenses, Office of Experiment Stations, Agricultural Research Administration"	-10,250	- -	
"Virgin Islands Agricultural Program, Office of Experiment Stations, Agricultural Research Administration"	-4,820	- -	
"Salaries and Expenses, Bureau of Dairy Industry, Agricultural Research Administration"	-3,200	- -	
"Control of forest pests, Agriculture"	-13,646	- -	
"Salaries and Expenses, Commodity Exchange Authority"	-7,727	- -	
"Salaries and Expenses, Farmers' Home Administration"	-833,000	- -	
"Removal of surplus agricultural commodities"	-812,357	- -	

(continued on next page)

Project	1954	1955 (estimated)
Transferred in 1955 estimates from:		
"Payments to States, Hawaii, Alaska, and Puerto Rico, Extension Service"	-243,982	- -
"Agricultural Marketing Act, Agriculture"	-96,104	- -
"State and private forestry cooperation, Forest Service" ...	-20,977	- -
"Salaries and expenses, Farmer Cooperative Service"	-2,000	- -
"Salaries and expenses, Rural Electrification Administration".	-11,062	- -
"Conservation Operations, Soil Conservation Service"	-25,055	- -
"Salaries and expenses, Bureau of Animal Industry, Agricultural Research Administration"	-1,800	- -
"Salaries and expenses, Bureau of Entomology and Plant Quarantine, Agricultural Research Administration".....	-3,785	- -
"Salaries and expenses, Bureau of Plant Industry, Soils and Agricultural Engineering, Agricultural Research Administration" .	-25,000	- -
Transfer in 1956 estimates to:		
"Salaries and Expenses, Office of Information, Agriculture"	+4,975	+5,000
Total appropriation or estimate	920,000	3,867,500

CHANGE IN LANGUAGE

The estimates include a proposed change in the language of this item as follows (deleted matter enclosed in brackets):

> Administration and coordination: For administration of the Smith-Lever Act, as amended by the Act of June 26, 1953 (Public Law 83), [section 5 of the Clarke-McNary Act (16 U. S. C. 568-568a),] and extension aspects of the Agricultural Marketing Act of 1946 (7 U. S. C. 1621-1627), and to coordinate and provide program leadership for the extension work of the Department and the several States, Territories, and insular possessions, [$1,925,000] $1,920,000.

The proposed change in language deletes reference to the authorization for farm forestry extension work under Section 5 of the Clarke-McNary Act (16 U. S. C. 568-568a). As explained under the "Payments to States" item, the 1956 Budget proposed to finance this work under the appropriation made to carry out the Smith-Lever Act. Therefore, it will not be necessary to refer to the Clarke-McNary Act in this item.

STATUS OF PROGRAM

1. General: The Federal Extension Service functions in three broad areas:

 (a) As the educational agency of the Department of Agriculture, coordinates the educational activities of the Department and administers the federal laws related to extension work.

 (b) Provides national leadership to insure a modern, progressive, highly productive and efficient educational program in assisting farm families to apply research results to modern day agriculture. This leadership is in the areas of the farm unit approach, program analysis and evaulation, finding and applying successful educational techniques, personnel training, effective use of radio, television, publications, sound, efficient administrative procedures and fiscal and personnel management. While program operations are geared to the needs and wants of the people and take place primarily in the counties and on the farms and in the homes, county agents are only as effective as their State and national leadership. The States operate for the most part within their borders and look to the Federal Extension Service for national leadership in the over-all planning and direction of the nationwide system of cooperative extension work.

 (c) Maintains close liaison with the research and action agencies of the Department, and as the coordinator of the educational work of the Department undertakes to incorporate all educational work of the Department into the educational and service work of the States and counties; works closely with other Departments of government and national private and public organizations and groups in order that all national effort of significance is coordinated with extension work in each State and Territory.

2. New Extension Techniques Explained: Regional and State conferences were conducted for all States to train State administrators and program leaders in new techniques of working with farm families more efficiently and effectively.

3. Need for Post-War Farm Adjustments Stressed: Agriculture is faced with many adjustment problems from an expanded production situation to meet war and reconstruction needs to one of contracted foreign outlets and more normal domestic markets. Declining farm prices, high farm costs, shrinking foreign markets for agricultural products, accumulating Government stocks, lack of storage facilities, changing world situations, business conditions and outlook, have intensified the need for economic information and educational programs.

 Federal extension economists have given attention to these urgent problems and needs for economic information; (a) to help bring better understanding of economic conditions and a better balance between agricultural production and utilization, (b) to expand outlets for farm products, and (c) to improve efficiency and reduce marketing costs.

4. Assistance Provided on Grain Storage Problems: The Federal Extension Service has taken a major role in the grain storage program through the preparation of educational materials and furnishing information to State extension services on support programs, facility, and equipment loans, research on construction and operating costs, and other facts pertinent to assisting farmers and the grain trade in meeting storage needs. Two circulars entitled, "Does Farm Wheat Storage Pay?" and "Economics of Storing Corn on the Farm" were prepared and made available for use by States.

5. Effective Action Restored Orderly Marketing of Broilers: In an effort to relieve a demoralized broiler market which occurred in mid-December 1953, the Federal Extension Service provided market and outlook information to the State extension services and others for dissemination to producers, processors, distributors, and consumers. The result was a noticeable increase in the strength of commercial broiler prices. Prices in the Delmarva area increased from 3 to 5 cents per pound. The action aided immeasurably in bringing to all segments of the poultry meat industry and consumers knowledge which resulted in a more normal and orderly movement of broilers through the market channel.

6. Facts on Beef Helped Avoid Demoralization of Cattle Market: A record of 93.6 million head on farms and the 1953 drought combined to make for record slaughter during 1953. Sharp price declines and some lack of producer confidence in the future contributed to a declining price of cattle. Starting in June the Federal Extension Service provided producers, through State and county extension workers, with a series of fact reviews presenting the plans, facts, and figures regarding the beef purchase program and the effect it would have on the market for lower grades of cattle. This marketing information helped to re-establish confidence and stabilize the cattle market.

7. Need for Increased Marketing Efficiency Emphasized: With producers receiving a smaller and smaller share of the consumer dollar, strengthened national leadership has been provided the States in their expansion of educational work designed to improve the efficiency of marketing by applying the results of marketing research in an effort to change this trend. During the year a special training conference on expanding marketing educational programs was held for State Extension Directors. Directors or their representatives from 36 States and Puerto Rico attended.

8. Farm Forestry Publication Provided to State Extension Foresters: A publication was prepared on "Farm Forestry Extension, What It Is and How It Works," also several issues of Random Forestry Notes, were prepared as a means of providing State Extension foresters the best methods of applying the latest information to forestry extension work.

9. Effective Home Management Methods Encouraged: All members of the home economics staff provided program leadership in assisting State extension workers in using effective educational methods in extension work. Particular attention was given to developing new programs, expanding existing programs in providing more personal assistance to farm families and in strengthening consumer education, family living, public affairs and work with young homemakers and boys and girls through 4-H Clubs.

10. Extensive Assistance Provided 4-H Club Programs: The Federal staff provides assistance to State extension directors and 4-H Club leaders in analyzing, planning, and developing 4-H educational programs for youth. Consultative and advisory service is provided in coordinating youth work as an integral part of the total extension educational program. Following sound conservation practices, more than 600,000 acres of land is being managed by 4-H Club members. The nearly 100,000 acres of vegetable crops grown by 4-H boys and girls are examples of how Club work is contributing to community and family needs.

The Federal extension staff develops the program for the National 4-H Club Camp which involves the assimilation of the recommendations of State leaders and others into a program of action. The nation's executive, judicial, and legislative leaders are contacted in arranging for their participation in assembly programs, inspirational ceremonies, and discussion meetings. Special training sessions are organized for leaders as well as delegates. National 4-H Club delegates return to their homes better acquainted with departments of government and a new understanding of how the branches of government function in our democratic society. Their horizons are widened to the problems beyond their State and country's borders. They have a deeper realization of the responsibilities of competent citizenship and are inspired to give greater service to their Club, their community, and their country. National Camp also serves as the planning apex for the National 4-H Club Program. 4-H Club members, State leaders, representatives of the Federal Extension staff share in the development of the 4-H Club program for the nation in the environment of the Nation's Capital.

11. Manual Developed on Extension Techniques: Extension is constantly challenged to develop new programs and improved techniques for serving an ever-changing rural life. The aggressive prosecution of a comprehensive program of field studies helps administrative and supervisory officers, subject matter specialists and county extension workers to more systematically evaluate their work; to modify and improve current teaching methods and take advantage of new methods; to analyze the interests and needs of people and utilize the program planning process for teaching purposes; and to provide a body of scientific information about extension for administrative and supervisory consideration in the formulation of programs, policies and procedures.

The significant findings from extension research and other reliable sources relating to the relative effectiveness, economy and essential elements in the use of the various teaching methods used in extension have been incorporated in a reference manual for the guidance of State and county extension workers. This publication will also serve as a text for methods courses given in connection with personnel training programs.

12. National Center for Research and Training Planned: Even though extension workers have had good basic undergraduate training in agriculture or home economics, including some attention to the educational process and the skills required to work with people, much of the technical proficiency in extension teaching must be acquired on the job, experience being supplemented with an adequate inservice training program. Induction training to assist the 1,500 to 2,000 new extension workers employed each year to get started right is exceedingly important. Graduate study provides specialized training to fill key administrative and supervisory vacancies as they occur. A committee of the Land-Grant College Association is actively engaged in developing plans for the establishment of a national center for advanced study in administration and supervision. Such a center would provide much needed facilities for the conduct of both research and training in this exceedingly important aspect of Extension.

13. Extension Teaching Materials Furnished Cooperative Extension Workers: In response to needs and requests, teaching materials were prepared and distributed to the 12,700 State and county cooperative extension workers to keep them quickly and adequately informed of national problems, policies, and programs affecting rural people, of research results, of the agricultural, rural family living, and domestic and foreign agricultural outlook and other information. These included:

Providing staff members with copies of Department and other policy releases and program statements and extension circular letters and statements relating to extension educational programs.

Keeping extension workers informed about Department publications relating to subject matter and research, and filling 14,100 requests from State extension workers for 3,286,400 printed and 184,200 processed publications.

Preparing and issuing the Extension Service Review, a monthly periodical for all cooperative extension workers, giving special emphasis to educational methods, marketing, training, program planning, home demonstration, and 4-H Club phases of Cooperative Extension Work. Seven issues included special attention to the strengthening of farm and home development.

Producing 9 new filmstrips, and maintaining a filmstrip service from which 7,749 filmstrips were ordered by extension and other educators over the country.

Distributing about 7,500 photographs for educational use in response to requests from the States and others.

14. Connumications Training Intensified: State and county extension workers supplement and strengthen their face-to-face educational efforts both with visual aids and information through communication channels, such as newspapers, television, radio, etc. To help them do a more effective job training activities were carried on by the Federal Extension Service in the use of all types of informational media. A television handbook was prepared as a training aid for county extension workers and 43 television training sessions were conducted in 21 States which 2,200 extension workers attended.

15. Training Meetings of State Administrative Officers Conducted: At the request of the Western and Southern State Extension Directors, the Division of Management Operations arranged and conducted seminar type training meetings for administrative officers of the two regions. The meeting with the Western group was held in Salt Lake City in February and the Southern representatives came to Washington in April. Special attention was given to new developments in personnel and fiscal procedures and their application to State Extension offices. Additional advice and assistance along general administrative lines was provided the staff members who have recently become responsible for the business affairs of State extension services. Meetings of this kind provide an excellent opportunity for representatives of the various States to discuss and solve jointly the many administrative problems that are of common concern to the States and the Federal Extension Office.

STATEMENT OF OBLIGATIONS UNDER ALLOTMENTS AND OTHER FUNDS

(Includes only those amounts which, by November 30, 1954, were actually received or programmed for 1955 or 1956. Since work for other agencies is performed on a service basis, at the request of those agencies and for their benefit, it is not practicable to estimate in advance the amounts to be received in most cases.)

Item	Obligations 1954	Estimated Obligations 1955	Estimated Obligations 1956
Allotments from:			
Administrative Expenses, Section 392, Agricultural Adjustment Act of 1938 - For technical assistance rendered Agricultural Stabilization and Conservation Committees in the administration of programs in Alaska	$800	$800	$800
Local Administration, Section 388, Agricultural Adjustment Act of 1938, Agriculture - For technical assistance rendered Agricultural Stabilization and Conservation committees in the administration of programs in Alaska	4,500	4,500	4,500
Total	5,300	5,300	5,300
Allocations and Working Funds: (Advances from other agencies):			
Foreign Operations Administration - For expenses in connection with training and technical assistance activities	63,352	98,000	- -
Trust Funds:			
Miscellaneous Contributed Funds, Department of Agriculture:			
For cooperative work with land-colleges on appropriate in-service training activities through summer-session courses for extension workers	2,807	2,000	2,000
For the services of a coordinator and for a cooperative study to evaluate progress and effectiveness of the International Farm Youth Exchange Program	8,866	3,044	- -

(Continued on next page)

Item	Obligations 1954	Estimated Obligations 1955	Estimated Obligations 1956
For the services of an educationist to plan, organize and conduct special phases of the educational program of the International Farm Youth Exchange Program	4,791	- -	- -
Returned to Donor	- -	6,523	- -
Total, Miscellaneous Contributed Funds	16,464	11,567	2,000
Obligations Under Reimbursements From Governmental and Other Sources:			
Federal Extension Service: From the proceeds of the sale of personal property, and from various other government sources for personal services, taxes, and assessments	9,660	3,624	3,624
TOTAL, OBLIGATIONS UNDER ALLOTMENTS AND OTHER FUNDS	94,776	118,491	10,924

FARMER COOPERATIVE SERVICE

Purpose Statement

The Farmer Cooperative Service was established as a result of the Farm Credit Act of 1953 (Public Law 202, August 6, 1953), which transferred the research and technical assistance work for farmers' marketing, purchasing and service cooperatives, under the Cooperative Marketing Act of 1926 from the Farm Credit Administration to the Secretary of Agriculture. The Service conducts research and carries on related service and educational activities on problems of organization, financing, management, merchandising, product quality improvement, costs, efficiency, and membership. The Service works closely with cooperatives to help the three million farmers who are members of such organizations improve the operations of their businesses. It cooperates with farmers' associations, the Extension Service, Land-Grant Colleges, Banks for Cooperatives, State Departments of Agriculture, and other agencies to bring about better understanding and application of sound cooperative principles and practices. The Service also advises other Federal agencies on problems relating to agricultural cooperatives.

The Service carries on its work through three program divisions - Marketing, Purchasing and Management Services. On November 30, 1954 the Service had 92 employees, 91 of whom were full-time and 1 part-time, all stationed in Washington, D. C.

	Appropriated, 1955	Budget Estimate, 1956
Salaries and Expenses	$408,000	$408,000

Salaries and Expenses

Appropriation Act, 1955, and base for 1956	$408,000
Budget Estimate, 1956	408,000

PROJECT STATEMENT

Project	1954	1955 (estimated)	1956 (estimated)
1. Research and technical assistance for farmers' cooperatives	$398,876	$408,000	$408,000
Unobligated balance	9,124	- -	- -
Total available or estimate	408,000	408,000	408,000
Transferred to "Salaries and expenses, Federal Extension Service	+2,000	- -	
Total appropriation or estimate	410,000	408,000	

STATUS OF PROGRAM

Current Activities: The Farmer Cooperative Service assists farmers through their 15,000 business cooperatives by providing research, advisory and educational services, and issues published material dealing with principles, practices and problems of these organizations. Research studies are conducted to provide basis information of value in assisting these cooperatives to improve their marketing, purchasing and general efficiency, which is an urgent need in the face of the present high cost of farm supplies and rising costs of marketing farm produce. The service and educational activities which are based on this research are prepared to help farmers and their cooperatives meet problems and improve their organizational structure and operating performance.

Selected Examples of Recent Progress: The Farmer Cooperative Service worked on 77 projects in 1954, and 80 will be initiated or continued during 1955 and 1956. During 1954 the Farmer Cooperative Service completed 80 projects or specific phases of projects for the benefit of farmers who are members or patrons of cooperatives. Research studies are generally national or regional in scope. The Service also conducts case studies of selected cooperatives which provide information of a basic character useful in providing advisory services to these and other cooperatives and in the preparation of educational material for general use. Many of these studies are made in collaboration with land-grant colleges.

The following projects conducted in 1954 are typical of the work of the Farmer Cooperative Service:

Methods of compensation and incentives for petroleum deliverymen of farmer cooperatives appraised. -- This study was undertaken at the request of petroleum cooperatives affiliated with the National Council of Farmer Cooperatives to determine present compensation and incentive methods in use and to evaluate the influence of different methods on volume, delivery costs, credit performance, and employee turnover. Twenty-two regional cooperatives participated in this study by sending mail questionnaires to their local association members and providing fieldmen or auditors to obtain data from locals using different methods of compensation. This study reveals the advantages and disadvantages of different compensation methods in the distribution of petroleum products. The directors and managers of the more than 1,000 local cooperatives participating in this study are using its findings to give farmers better petroleum delivery service at lower cost.

Frozen food locker cooperatives in Illinois assisted. -- At the request of, and in cooperation with the Illinois Agricultural Association, a study of 31 county cooperatives operating 82 frozen food locker plants was made. The study provided cooperative managers and directors, and others with information on the operations and the relative efficiency of each association. The analyses showed the areas of operation in which certain associations were inefficient, or below average, and suggestions were made for improving operating efficiency, reducing costs, and increasing volume of processing and sales. Suggested performance yardsticks for measuring the efficiency of labor and capital utilization were developed. The results of this study are being used by directors and managers of these cooperatives as well as by similar cooperatives in other areas to bring about improvements in operations.

Statistics provided on farmers' marketing, purchasing, and related service cooperatives. -- The annual survey conducted by Farmer Cooperative Service is the only source of basic information on farmers' cooperatives throughout the United States. The statistics compiled are widely used by national farm organizations, Federal and State agencies, schools and colleges, and students of agricultural cooperation in the United States and foreign countries. Recent improvements in procedures and analysis have resulted in more complete data and have greatly increased the usefulness of these statistics. The fact that 87 percent of the 10,166 marketing, purchasing and related service associations cooperated fully in the latest survey is evidence of the high degree of interest cooperatives have in this work. These data provide valuable information concerning the scope, trends and numbers of associations, membership and volume of business of farmers' cooperatives. Such information is essential to those interested in the work of farmer cooperatives, in evaluating progress and trends in their organization and operation, and in understanding their part in the Nation's free enterprise system.

Farm supply operations in a Western State unified. -- This is an example of service work where two regional cooperatives -- one a centralized and the other a federated organization -- requested assistance as to ways by which greater efficiency and economy could be obtained through unifying or coordinating their farm supply operations. After a short study, findings were presented and discussed with boards of directors of the two organizations. Results developed through the study are serving as a basis for developing better service on a more economical basis.

Ways to reduce costs suggested to dairy cooperatives. -- At the request of the Georgia Association of Dairy Cooperatives and the Georgia Extension Service, a study was made of the business operations of all 14 milk distributing cooperatives in Georgia. Financial statements were compared in detail and were evaluated to provide guidance to cooperative managements. Numerous suggestions relating to specific practices and procedures were made to enable the cooperatives to reduce costs. A supplementary study was made of the operations of the largest of these associations and further recommendations made to increase its efficiency. The principal findings of these studies are being prepared for publication in order to assist similar cooperatives in other states to serve their farmer-patrons more effectively.

Organization and operation of dry bean joint sales agency aided. -- The Western States Bean Cooperative is a joint sales agency owned and controlled by dry bean marketing associations in the Intermountain States. Directors of this regional cooperative requested a study of its operations. The study has been helpful not only to the regional and its member-associations, but also to cooperatives in other dry bean producing regions. The report of this study discusses the organizational structure, operating methods and practices, and the progress and development of the cooperative. The information concerning this cooperative's operations has been of assistance to the several cooperative groups in determining the type of organization and plan of operation of a national bean marketing cooperative now getting under way.

Report published on agricultural cooperatives in Western Europe. -- In view of this country's increasing interest in foreign trade opportunities, the Farmer Cooperative Service has prepared a popular type publication describing the agricultural cooperatives in Western Europe. This project is being conducted jointly with the Foreign Agricultural Service whose foreign service memoranda and special reports serve as the principal sources of information. Supplementary data have been gathered also through the foreign mission offices to round out the information desired. The report describes the individual cooperatives, the services they perform and their relative importance in their respective fields. The report also describes the relationships of these cooperatives with industry and with their respective governments. This report serves as a handy reference regarding the cooperatives in Western Europe, and is of particular value to government officials, American cooperatives, and other business enterprises interested in developing trade outlets in Europe.

STATEMENT OF OBLIGATIONS UNDER ALLOTMENTS AND OTHER FUNDS

(Includes only those amounts which, by November 30, 1954, were actually received or programmed for 1955 or 1956. Since work for other agencies is performed on a service basis, at the request of those agencies and for their benefit, it is not practicable to estimate in advance the amounts to be received in most cases.)

Item	Obligations 1954	Estimated Obligations 1955	Estimated Obligations 1956
Working Fund (Advances from other agencies):			
Department of Agriculture, Agricultural Marketing Service - For marketing research activities	$233,503	$309,000	$323,000
Obligations Under Reimbursements From Governmental and Other Sources:			
Salaries and Expenses:			
For detail of personnel to other Federal agencies	3,587	- -	- -
TOTAL OBLIGATIONS UNDER ALLOTMENTS AND OTHER FUNDS	237,090	309,000	323,000

SOIL CONSERVATION SERVICE

Purpose Statement

The Soil Conservation Service was established by the Act of April 27, 1935 (16 U.S.C. 590a-590f). It assists soil conservation districts and other cooperators in providing technical aid to farmers and ranchers in bringing about physical adjustments in land use that will conserve soil and water resources, provide economic production on a sustained basis, and reduce damages by floods and sedimentation. The Service also develops and carries out special drainage, irrigation, flood prevention, and watershed protection programs in cooperation with soil conservation districts, watershed groups, and other Federal and State agencies having related responsibilities.

Conservation Operations Program Activities:

The Service provides technical and other assistance to farmers, ranchers and others through soil conservation districts and other cooperators in the 48 States, Alaska, Hawaii, Puerto Rico, and the Virgin Islands, in carrying out locally-adapted soil and water conservation programs. (As of June 30, 1954, farmers and ranchers had organized 2,618 conservation districts.) The assistance furnished by the Service includes (a) making soil surveys to provide physical land facts needed to determine the use capabilities and conservation treatment needs of each acre of farm and ranch land and the publishing of soil survey reports and maps which are useful also to other Federal and State agencies and the public in the development of special land-use programs and for other purposes, (b) technical assistance in developing and applying conservation farm and ranch plans which allow for the best possible use by the farmer or rancher of his land, labor, equipment, and financial resources, (c) the loan of some special types of equipment not readily available to the farmer but needed to establish certain conservation practices, (d) observational studies and field testing of new and improved species and strains of grasses and legumes, trees, shrubs, and other plant materials that may be useful in controlling erosion and improving pasture and range land, and (e) making of snow surveys and streamflow forecasts in the Western States to provide for efficient seasonal utilization of available water supplies.

Watershed Protection Program Activities:

The Service has general responsibility for administration of the Watershed Protection program of the Department, and the formulation and development of its guiding principles and procedures. The program consists of (a) completing the installation in 60 heretofore specifically designated small watersheds located throughout the country, pilot demonstrations of the effectiveness of watershed improvement programs in retarding runoff and waterflow, conserving soil and preventing erosion, and reducing upstream flood and sediment damage, and (b) cooperation with States and local public agencies in planning and installing in small upstream watersheds works of improvement designed to prevent erosion, floodwater, and sediment damage, and to further the conservation, development, utilization, and disposal of water.

In cooperation with soil conservation districts and other local groups and organizations, the Soil Conservation Service provides technical assistance to farmers and ranchers in these small watersheds in the planning and application of soil and water conservation practices and technical and financial assistance in the planning and installation of water and erosion control measures such as diversion ditches and dikes, waterflow retarding structures, debris and desilting basins, stream-channel improvements, floodways, gully control structures, roadside stabilization measures, etc. The Forest Service participates, generally by cooperating with State foresters, in planning and providing fire protection and furnishing technical forestry assistance to land owners in applying forest and woodland improvement measures on non-Federal lands and by installing all measures on lands under its administration. The Agricultural Research Service furnishes assistance in the assembly, correlation, and analysis of economic data needed in the planning phases of the program.

Flood Prevention Program Activities:

Pursuant to the Flood Control Act of June 22, 1936, as amended and supplemented, and under policies established by the Secretary, the Service has general responsibility for administration of the Flood Prevention program of the Department, and the formulation and development of its guiding principles and procedures. Since the passage of the Watershed Protection and Flood Prevention Act (P.L. 566, 83rd Congress) the program consists of the planning and installation of improvement measures primarily for flood prevention on the 11 authorized watersheds.

The Soil Conservation Service prepares detailed subwatershed work plans and installs works of improvement such as floodwater retarding structures, stream-channel improvements, gully stabilizing and sediment control measures, diversions, floodways, etc., on the 11 authorized watersheds. The improvement measures are installed in cooperation with local soil conservation and flood control districts and other local and State agencies.

The Forest Service carries out similar flood prevention activities on national forests and adjacent range lands and on other forest lands within the authorized watersheds.

The Soil Conservation Service participates, with the assistance of the Forest Service, the Agricultural Research Service, other agencies of the Department, and with other Federal and State agencies concerned, in planning comprehensive resource development programs for river basin areas.

Water Conservation and Utilization Program Activities:

Under the authority of the Acts of May 10, 1939 (53 Stat. 685, 719), October 14, 1940 (16 U.S.C. 590-z-10), as amended and supplemented, June 28, 1949 (Public Law 132) and September 6, 1950 (Public Law 760) the Service carries on a water conservation and utilization program in specific project areas. Irrigated and irrigable land (both Government and privately-owned) are developed for efficient use of irrigation water. Settlement opportunities are provided for veterans and needy farm families through

the sale of developed farm units. Technical assistance is furnished to settlers within the authorized project areas with their soil and water conservation and land-use problems. This work is being conducted on the two remaining active projects in South Dakota and Wyoming.

The Soil Conservation Service maintains its central office in the District of Columbia, with the majority of its activities highly decentralized to forty-six State and three territorial offices, and more than 3,300 area and work unit offices which carry on the technical programs in conservation districts, watersheds, and water conservation and utilization projects.

As of November 30, 1954, the Soil Conservation Service had 11,693 full-time employees (219 in Washington and the balance in the field) and 2,312 part-time employees who are generally employed in the field during the seasonal periods when there is need for additional assistance in applying conservation practices.

	Appropriated, 1955	Budget Estimate, 1956
Appropriated funds:		
Conservation operations	$57,568,579	$55,696,200
Watershed protection	7,210,000	11,000,000
Flood prevention	9,195,292	8,700,000
Water conservation and utilization projects	480,000	- -
Total	74,453,871	75,396,200

Summary of Appropriations, 1955, and Estimates, 1956

Appropriation Item	Appropriated, 1955	Budget Estimates, 1956	Increase (+) or Decrease (-)
Conservation Operations	a/ $57,568,579	$55,696,200	-$1,872,379
Watershed Protection	b/ 7,210,000	11,000,000	+3,790,000
Flood Prevention	c/ 9,195,292	8,700,000	-495,292
Water Conservation and Utilization Projects	d/ 480,000	- -	-480,000
Total, direct annual appropriation	74,453,871	75,396,200	+942,329

a/ In addition, $1,200,993 from prior year balances was available through December 31, 1954, for emergency channel restoration in flood-stricken areas, of which $1,190,993 is estimated to be returned to the Treasury.

b/ In addition, $682,718 is available from prior year balances.

c/ In addition, $2,040,676 is available from prior year balances.

d/ In addition, $324,955 is available from prior year balances but is being carried forward for use in 1956 along with $92,875 of the funds appropriated for 1955.

(a) Conservation Operations

Appropriation Act, 1955	$59,085,671
Activities transferred in the 1956 estimates to:	
"Flood prevention, Soil Conservation Service" for additional measures to accelerate flood prevention	-1,513,292
"Salaries and expenses, Office of Information, Agriculture", for news-type photographic services	-3,800
Base for 1956	57,568,579
Budget Estimate, 1956	55,696,200
Decrease	-1,872,379

SUMMARY OF DECREASES, 1956

Decrease due to elimination of some Area Offices in States where it is practicable to adjust area boundaries or where administration and supervision of work units can be handled more effectively and efficiently from the State Office	-600,000
Decrease due to simplification and standardization of cartographic techniques and procedures, and possible consolidation of some facilities	-500,000
Decrease due to reassignment of personnel to work on other SCS programs and consolidation of some work units	-752,379
Decrease due to adjustment in nursery operations in line with discontinuance of plant production work	-20,000

PROJECT STATEMENT
(on an available funds basis)

Project	1954	1955 (estimated)	Increase or Decrease	1956 (estimated)
1. Assistance to soil conservation districts and cooperators:				
(a) Planning, application and maintenance of practices	$55,630,480	$56,948,579	-$1,852,379	$55,096,200
(b) Observational field testing of conservation plant materials	714,382	620,000	-20,000	600,000
Subtotal	56,344,862	57,568,579	-1,872,379(1)	55,696,200
Unobligated balance	1,050,552	- -	- -	- -
Total available or estimate	57,395,414	57,568,579	-1,872,379	55,696,200

(Continued on next page)

Project	1954	1955 (estimated)
Transferred to "Salaries and expenses, Bureau of Agricultural Economics"	+224,500	- -
Transfers in 1955 estimates to:		
"Salaries and expenses, Agricultural Research Service"	+618,393	- -
"Salaries and expenses, Federal Extension Service"	+25,055	- -
"Salaries and expenses, Forest Service"	+1,233,471	- -
Transfers in 1956 estimates to:		
"Salaries and expenses, Office of Information, Agriculture"	+3,800	+3,800
"Flood prevention, Soil Conservation Service"	+1,443,381	+1,513,292
Total appropriation or estimate	60,944,014	59,085,671

Note: - Prior year balances of $1,997,883 were available in 1954 and $1,220,993 were available in 1955 from funds appropriated for emergency channel restoration and flood rehabilitation work. It is estimated that $1,190,993 of the latter amount will be returned to the Surplus Fund of the Treasury.

DECREASES

(1) A decrease of $1,872,379 under the project "Assistance to soil conservation districts and other cooperators", as follows:

(a) A decrease of $600,000 through reduction in the number of Area Offices.

It is planned to make adjustments in area boundaries to include more work units under the supervision of some Area Conservationists where it can be done without imposing an undue burden upon them. Careful analysis of the actual workload of each area will provide the basis for determining where adjustments can be made without affecting production and quality of work of subordinates. Also, in some of the smaller States, which have only one or two Area Offices, it is possible to eliminate such offices and to have program administration

handled directly by the State Office staff and by so doing, improve the effectiveness and efficiency of supervision. Experience in Alaska, Hawaii, and Puerto Rico which have been carrying on operations under such organization, indicates that this is practicable in the smaller States.

(b) A decrease of $500,000 through the simplification and standardization of cartographic techniques and procedures and possible consolidation of some facilities.

A service-wide study is presently under way to determine the minimum requirements needed on the soil-land capability and land-use maps used by field technicians in their conservation farm and ranch planning activities. As a result of this study maps of a relatively standard design and much simpler than those now in use in many States can be developed and adopted for reproduction in the Service field cartographic units. Determination will also be made as to whether other work now being performed in some of these units, such as measurement of soil maps, can be assumed as a part-time function by work unit staffs without reducing effective field time. Consolidation of some facilities are also anticipated with a view to effecting some savings in this manner. Significant economies are expected to result from these studies which will enable the Service to make the proposed savings without impairing operating effectiveness.

(c) A decrease of $752,379 due to the reassignment of personnel to work on other programs of the Service, and the consolidation of some work units.

1. The initiation of work authorized under the Watershed Protection and Flood Prevention Act requires the immediate assignment of trained engineers, geologists, hydrologists, economists, soil conservationists, and other technicians to this program to make preliminary field examinations of proposed watershed projects and to prepare work plans for some of these areas. These technicians and administrative personnel will be assigned to Watershed Protection work either on a part-time or full-time basis, depending upon need for their services, and their salaries charged to the appropriation for that work, thus enabling a corresponding reduction in requirements under this appropriation.

2. The Service is presently making a study of the work unit offices throughout the country to determine the workload, in form of demand for technical assistance, as compared with the staff available to handle it. There are some areas where it will be practical to consolidate work unit offices serving the area with some saving in technical staff and definite savings in cost of office space, utilities, communications, and clerical help. Other units can be assigned a greater territory to serve and still provide adequately the assistance needed by the farmers and ranchers of the district involved. Personnel will be assigned areas of work which will enable most efficient operation and effective utilization of available staff. This study is a part of the continuing workload review which good administration requires.

(d) A net decrease of $20,000 due to adjustment in nursery operations.

During the fiscal year 1954 agreements were entered into with cooperating agencies at five former SCS nursery sites which will continue to supply the Service with needed conservation plant materials for testing purposes. The Service is continuing to operate five nurseries as observational plant testing stations including the plant introduction nursery at Beltsville, Maryland, and the nursery at Aberdeen, Idaho. These 10 nurseries will provide needed plant materials for testing by the Service for adaptability for conservation purposes in all areas except the Southern Great Plains. In view of the critical conservation problems in this latter "dust bowl" area the Service is in need of obtaining materials grown especially for testing there. It proposes to do so by a new contract, if possible, with a state or other local agency in that area. Thus, the 1956 Budget proposes the growing for testing purposes and the testing, either by contract or direct operations where necessary, of plant materials for conservation purposes at 11 points strategically located to include all climatic or conservation problem areas. However, because the nursery production in 1956 will be confined to growing materials for testing purposes only, the total nursery costs as proposed for 1956 will be $40,000 less than in 1955, which is offset, in part, by increased costs of $20,000 for budget plant materials specialists who are stationed at strategic points in 22 States to locate sources of new conservation plant materials, to work with the cooperating agencies in testing and evaluating uncommon species and strains of grasses and legumes, to arrange for field tests on district cooperator farms, and to encourage production by commercial seed growers of promising plant materials.

The nursery stock planted before the decision was made to discontinue plant production, and now remaining in the ground at several nursery sites, will be lifted and distributed to district cooperators in the 1955 fiscal year. All of the Service work in the plant materials field will then be concentrated on plant testing.

STATUS OF PROGRAM

ASSISTANCE TO SOIL CONSERVATION DISTRICTS AND OTHER COOPERATORS

Current Activities:

The planning and establishment of soil and water conservation measures on farm and ranch lands is generally carried on in cooperation with soil conservation districts. These conservation districts are local units of Government, organized under State laws and responsible to the land-owners and operators in the districts and to the State legislatures. They are founded upon the sound principle of local initiative, direction, and control and are formed only in response to the petition and favorable referendum vote of the land-owners and operators who are carrying on agricultural operations within the proposed district boundaries. Conservation districts, numbering 2,618 on June 30, 1954, have been organized in all 48 States, Hawaii, Alaska, Puerto Rico, and the Virgin Islands.

The following types of assistance are being furnished to conservation districts in carrying out locally-adapted programs of soil and water conservation:

1. The services of soil scientists who make the necessary physical inventories of the land to secure data (soil type, degree of slope, character and extent of erosion, present land use, etc.) needed to determine the use capabilities and conservation needs of each acre of land. These soil surveys are conducted cooperatively with the land grant colleges and other designated State agencies and the survey reports and related soil maps are eventually published for the use of the Service, other Federal and State agencies and the public, in the development of land-use programs and for other purposes.

2. The services of soil conservationists, engineers, and other agricultural specialists and aides who help farmers and ranchers develop and apply individual conservation farm or ranch plans. The soil and water conservation practices included in such conservation plans allow for the best possible use of the farmer's land, labor, equipment, and financial ability to do conservation farming on his land.

3. The use of special equipment needed to facilitate establishment of conservation practices but which is of a kind that is beyond the purchase ability of an individual operator or for other reasons not readily available to the farmers and ranchers within the conservation district.

4. Technical assistance in watershed planning and other group enterprises, comprising consultation and advice on water and sediment problems, the development of work plans and supervision over construction, for the purpose of retarding runoff,

stabilization of roadside waterways, reduction of sediment damage to agricultural lands, reservoirs, industrial property, and roads and bridges; and the drainage or irrigation of valuable agricultural lands.

5. In the western States, streamflow forecasts — developed from snow surveys — which serve as a basis for efficient seasonal utilization of water available for irrigation and other purposes.

6. The operation of a limited number of nurseries for observational purposes and field-scale trials of promising conservation plant materials to determine their suitability for erosion control purposes, and cooperation with non-Federal agencies in the propagation and utilization of new and uncommon strains of vegetative planting materials to promote adequate domestic production and distribution for conservation purposes.

In cooperation with other Federal and State agencies, some assistance is also given to other farmers and ranchers outside conservation districts. This assistance develops a better understanding locally of erosion and land-use problems, encourages more widespread adoption of conservation farming methods, and assures technical soundness of the practices applied.

In addition, the Service provides technical assistance to Agricultural Conservation Program participants in the planning, lay-out, and establishment of permanent-type conservation practices, both within and outside soil conservation districts. Part of the cost of this work is paid from funds advanced from the appropriation for that program.

Recent Progress:

New Conservation Districts Organized

During the fiscal year 1954 local farmers and ranchers organized 69 new conservation districts and 106 additions to existing districts comprising in all about 37-1/2 million acres. As of June 30, 1954 the 48 States and territorial possessions, all of which have enacted soil conservation district legislation, had organized a total of 2,618 conservation districts covering an area of over 1.4 billion acres. Approximately 88 percent of the total farms in the nation are now within the boundaries of organized conservation districts with 14 States and 2 territorial possessions completely covered by such districts. It is anticipated that there will be approximately 74 new districts organized in 1955 and 58 additional districts are forecast for 1956 which will bring the total number to 2,750 with over 94 percent of the nation's farms included within district boundaries. The following table shows information concerning the conservation districts organized as of July 1, 1954:

Kind of District	State	Number of Districts	Approximate Area (Acres)	Number of Farms	Farmland (Acres)
Soil Conservation Districts	46 States 1/	2,536	1,414,271,817	4,707,181	940,619,211
Soil Conservation Districts	Carribean Area	19	2,269,711	54,270	1,855,502
Soil Conservation Districts	Hawaii	13	2,290,889	3,702	983,094
Wind Erosion Districts	Texas	2	1,520,240	909	1,478,635
Sub-districts 1/	N. H.	10	5,770,880	13,391	1,713,731
Sub-districts	Alaska	9	4,391,000	924	104,374
Work Area (called districts) 1/	Conn.	8	3,135,360	15,615	1,272,352
Grass Conservation Districts	Mont.	20	6,950,796	1,797	4,093,653
Imperial Irrigation District	Calif.	1	884,990	4,838	501,830
Total Cons. Districts:		2,618	1,441,495,683	4,802,627	952,622,382

1/ In New Hampshire and Connecticut the comparable organizational units are called "Sub-districts" and "Work Areas" respectively.

The attached map shows the conservation districts which had been organized as of July 1, 1954.

Number of Farms and Acreage in Conservation Districts

Date	Number of Districts Organized	Total Acres in Organized Districts	Approximate Acres in Farms	Number of Farms in Districts
Actual				
June 30, 1953	2,549	1,403,988,782	933,093,148	4,713,875
Average per district		550,800	366,062	1,849
June 30, 1954	2,618	1,441,495,683	952,622,382	4,802,627
Average per district		550,610	363,874	1,834
Estimated				
June 30, 1955	2,692	1,475,000,000	975,000,000	4,925,000
Average per district		547,920	362,184	1,829
June 30, 1956	2,750	1,505,000,000	995,000,000	5,025,000
Average per district		545,450	361,818	1,827

Information Furnished Groups Sponsoring Soil and Water Conservation

The conservation of the nation's soil and water resources is of great concern not only to farmers and ranchers but to civic groups, industrial organizations, labor unions, business and professional men, educators, ministers, youth organizations, and others. This is evidenced by the increasing efforts of individuals and groups to stimulate activity in soil and water conservation work through informational programs.

Most civic, educational, and religious organizations see the sponsorship of programs of conservation information as an opportunity and obligation to promote human welfare through conservation of these basic resources. Business and industrial organizations see it not only as an obligation of good citizenship but also as being basic to their own business prosperity. Many of these groups look to the Soil Conservation Service for factual information and guidance on the information programs they choose to sponsor. The Service gives such cooperation insofar as its facilities permit. In fact, nearly all the informational activities of the Service are directed toward helping such groups promote community, State, regional, or national programs on soil and water conservation.

Farm and Ranch Conservation Planning Improved

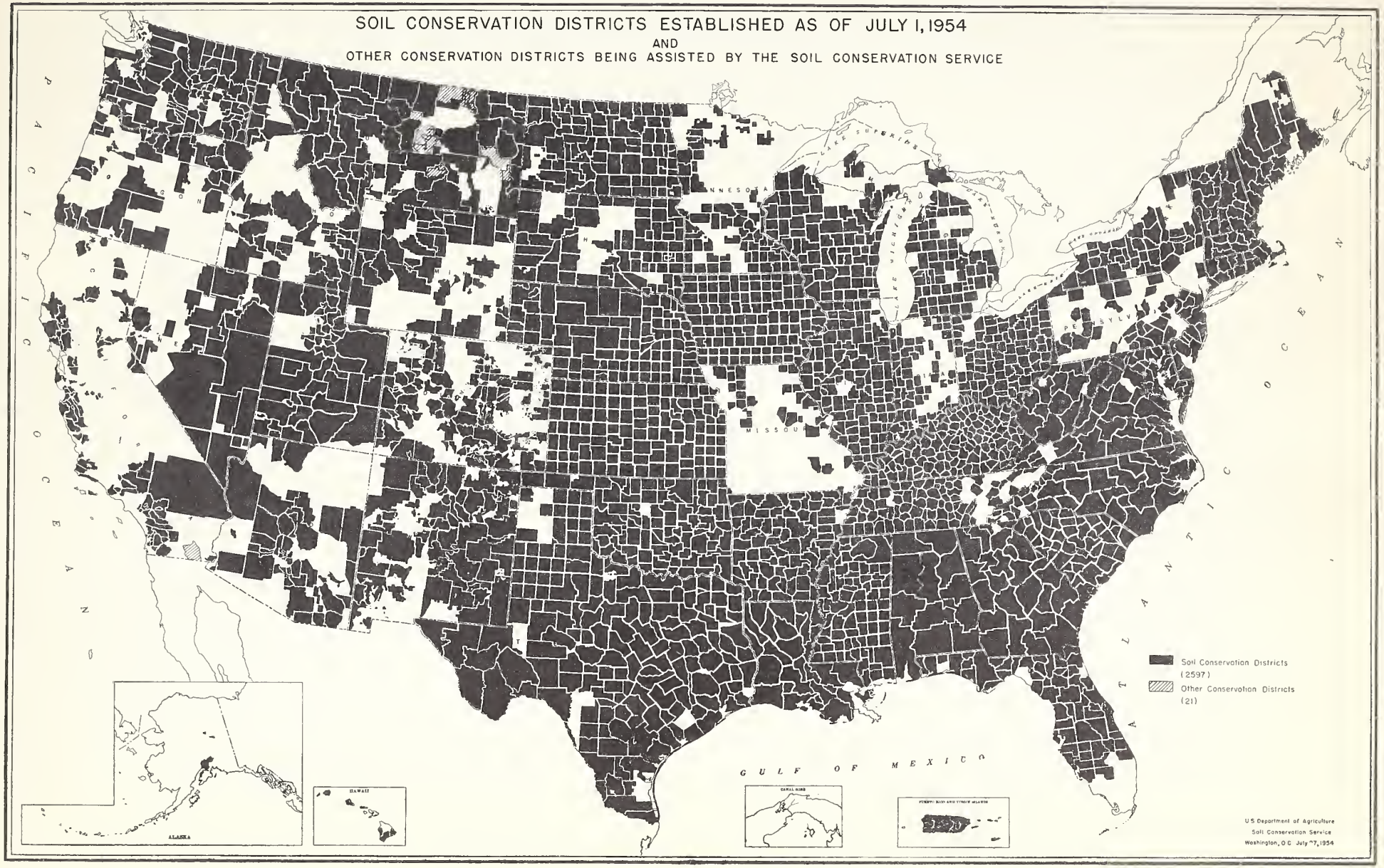
The progressive planning system, instituted in 1951, has been carefully analyzed and in April, 1954, minor changes were made which are expected to improve the effectiveness and increase the scope of conservation farm and ranch planning throughout the Service. Under the progressive planning system large numbers of additional farmers and ranchers each year have become cooperators with their soil conservation districts and have started the development of conservation plans for their operating units. The number of new cooperators requiring assistance each year has caused an increase in the work load in many work units in planning and applying individual practices. This has resulted in a decline in the number of new basic plans developed. At the same time, however, the large number of new cooperators who have done some conservation work has resulted in a steadily increasing amount of conservation applied to the land each year with technical assistance from the Service.

Although there has been a significant increase in application of conservation practices, the single practice planning approach usually does not result in adequately coordinated basic conservation plans for operating units. More emphasis will be given in the future to basic farm and ranch conservation planning in order to assure a technically sound program.

Conversion of Cropland to Grass Widely Adopted as Part of the Soil Conservation Program

The conversion of cropland to grass has progressed very rapidly in many parts of the country. This movement has been especially significant in the Southeast. Many new and important grasses and legumes not available

SOIL CONSERVATION DISTRICTS ESTABLISHED AS OF JULY 1, 1954
AND
OTHER CONSERVATION DISTRICTS BEING ASSISTED BY THE SOIL CONSERVATION SERVICE



U.S. Department of Agriculture
Soil Conservation Service
Washington, D.C. July 7, 1954

USDA SCS BELTSVILLE MD 1984

ten years ago have been introduced and widely adopted as part of the conservation program of soil conservation districts with Service assistance. A whole new industry centering around the production and processing of grass and legume seed has grown up in the Southeast. Abundant supplies of seed at reasonable prices are now available. The resulting increase in livestock production and decrease in cotton growing has helped reduce erosion, stabilize the agriculture, and significantly increase farm incomes. These widespread changes have increased the requests from farmers for technical assistance from the Service. Farms that were planned only a few years ago for maximum crop production are now being re-planned for maximum forage production. Terraces once needed on cropland are being leveled where those fields are planted to grass. Grass culture in fields formerly devoted to row crops has brought about extensive adjustments in farming methods, machinery and enterprises. New conservation techniques have been developed and widely adopted by farmers who have found grass-based crop rotations and livestock production to be more stable and profitable than a cash crop system of farming.

Profits Increased Through New Conservation Program Developed for California Ranges

On most western ranges, summer is the time the forage makes its best growth, the plants are at their most nutritious stage, and livestock make their best gains. However, in California the annual forage plants dry completely by the first of May, quickly lose their value after that date, and grazing animals lose weight unless fed expensive concentrates. As the forage dries, much of it crumbles and disappears creating an erosion hazard by exposing the soil to washing fall rains.

After considerable study of all phases of the problem, the Soil Conservation Service technicians have developed what appears to be a highly satisfactory solution -- a system of (1) using grasses specially developed for the area to provide more tonnage and a longer green-feed period, (2) applying fertilizers to bring about increased growth and to give the necessary soil protection, and (3) the application of good range management. This program has proven to be more profitable to the landowners; the ratio of benefits to costs is over 3 to 1. On one ranch in the Corning Soil Conservation District, for example, fertilized range produced 127 pounds of lamb per acre, while comparable unfertilized range produced only 11.6 pounds per acre. Deducting all costs, the net return was increased $8.21 per acre. Of great importance also was the fact that 2-1/2 tons of plant material per acre were left on the range to protect the soil and provide some fall grazing.

Survival of Tree Plantings Increased Through Careful Woodland Site Selection

Each year more and more tree seedlings are being given to landowners and operators by the forest industries. Surveys have shown that promiscuous distribution of tree seedlings results in low survival. Last year the West Virginia Pulp and Paper Company, through its Georgetown, S. C., Division, gave more than two million pine seedlings to selected landowners

in South Carolina and Georgia. The company made its selections on the basis of reports of land conditions made by the Soil Conservation Service farm planners. These reports showed kind and condition of land on which trees were to be planted, thereby eliminating one of the primary causes of tree mortality. Another major cause of past planting failures of industry-donated stock - lack of landowner interest and understanding of how to plant - was also eliminated by making it necessary for the landowner to find out his lands' suitability for trees.

Land Damage by Wind Erosion Increased During Fiscal Year 1954

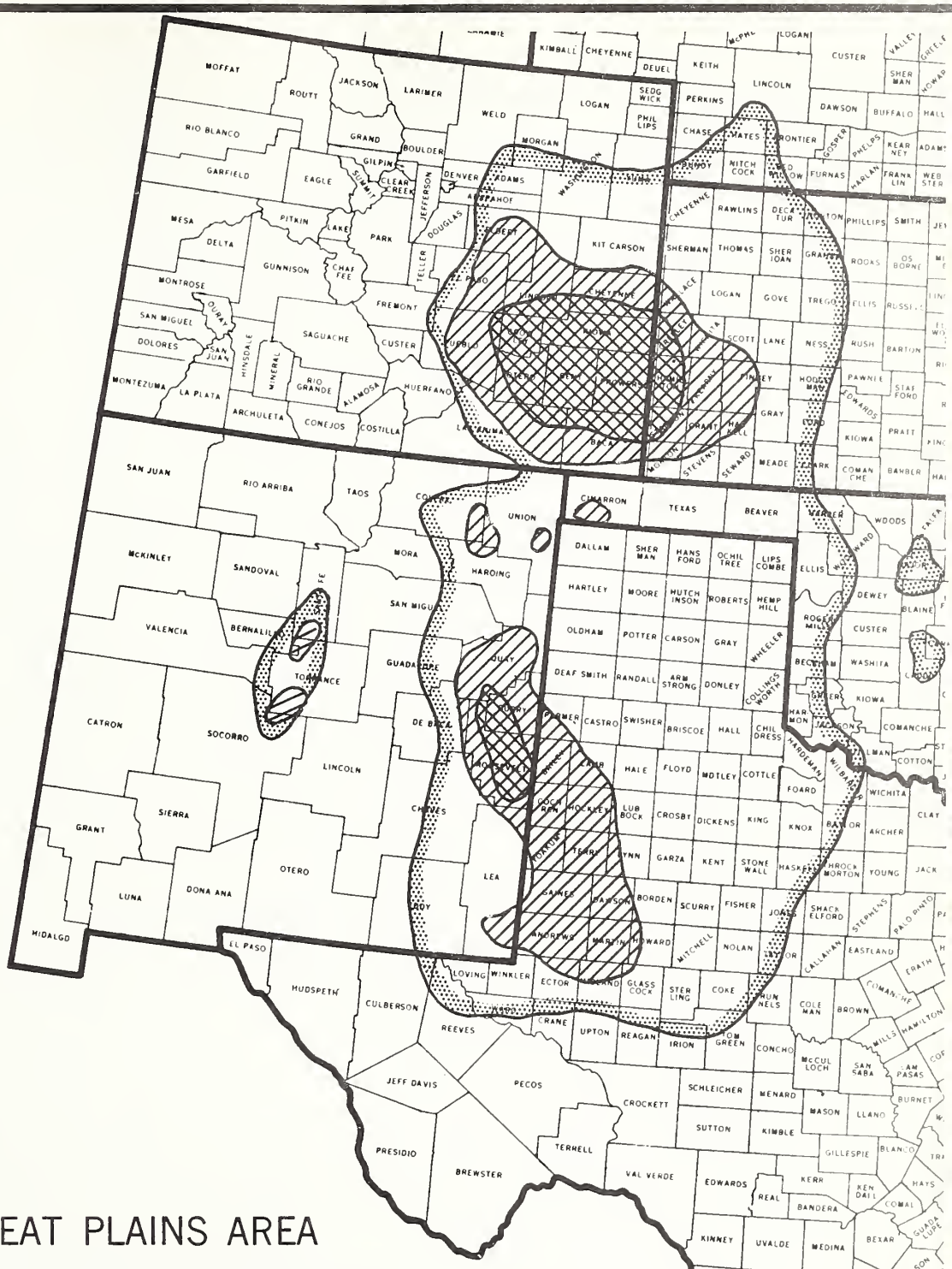
The land damaged by wind erosion in the Southern Great Plains during the 1954 blow season greatly exceeded that of recent years. The results of a survey made by Service personnel showed the total agricultural land damaged as of July 1 was 18,423,000 acres, of which 13,578,000 acres was cropland and 4,844,000 acres was range land. This acreage of land damage has been accumulating over a period of several drought years, but most of it occurred during the past year. Furthermore, the intensity of damage in certain localities has been increasingly severe.

Wind damage estimates as of July 1, 1954 were as follows:

	Cropland Acres	Range Land Acres	Total Acres
Colorado	3,833,000	1,660,000	5,493,000
Kansas	4,704,000	346,000	5,050,000
New Mexico	1,198,000	814,000	2,012,000
Oklahoma	796,000	42,000	838,000
Texas	3,048,000	1,982,000	5,030,000
Total	13,578,000	4,844,000	18,423,000

Concentrations of severely damaged land are shown on the attached map. The largest one is in southeastern Colorado and southwestern Kansas. The other area is in eastern New Mexico, and in the southwestern part of the high plains in Texas. Within these areas, more than 50% of all cropland had been damaged by soil blowing.

Land damaged during the current drought period is much more widespread and severe than during the 1930's. More damage to land is likely during the next blow season because of small soil moisture supplies, poor crop residue conditions and lack of vegetative cover on the land. The financial and credit conditions of many of these farmers and ranchers are critical, but many propose to stay in these areas and use the conservation program on their land. District supervisors and Service technicians are working together closely in planning the conservation program needed to control land damage in 1955.



GREAT PLAINS AREA

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

JULY 1, 1954

GENERAL BOUNDARIES OF AREAS WHERE SOME LAND DAMAGE BY WIND EROSION HAS OCCURRED

AREAS WHERE MORE THAN 50 % OF THE CROPLAND HAS BEEN DAMAGED BY WIND EROSION

AREAS WHERE MORE THAN 75 % OF THE CROPLAND HAS BEEN DAMAGED BY WIND EROSION

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Evidence of the effectiveness of known measures in protecting land against wind erosion is abundant. The areas of greatest damage in the early 1930's have given little trouble in the past two years because of the widespread adoption by farm and ranch operators there of adequate protective measures. It was observed that where farmers were able to apply their conservation programs fully and properly, damage was either much less than on unprotected farms, or was absent entirely, except in some cases for wind depositions. Damage that has occurred has been limited generally to deposition of wind blown soil from unprotected areas.

Water Conservation Measures Intensified Due to Drought Conditions

Disappearance of surface water supplies and falling underground water tables over large areas of the country brought about by several years of drought and increased use of water for irrigation has resulted in new emphasis on water management measures in the conservation needs of the country. Even though the practices and measures applied to the land for both soil conservation and water conservation have some similarity, their application must be intensified to provide relief from drought. More infiltration of water is needed to provide for present crop production, farm livestock, and general rural use as well as to recharge the ground water supply. The intensity with which water conservation measures have been applied during the past fiscal year already reflects the change in total needs for such measures to improve the water supply. Local adjustments are now being made in the conservation needs data to reflect requests from farmers for additional water conservation measures and to provide for the application of additional practices and measures.

Assistance Provided for Cooperative Group Drainage Work

Farmers in the Dixon Soil Conservation District in Solano County, California, had a serious drainage problem on 16,000 acres where a high water-table aggravated by irrigation waste water and a poor surface water disposal system was resulting in water logging and increased alkalinity in much of the soil. An investigation was made by SCS technicians and a drainage system was constructed including 5 miles of main canal and 24 miles of laterals which has effectively cured the drainage problem. The 61 farmers raised the money for construction among themselves; and in addition, the American Telephone & Telegraph Company paid for the drainage of 640 acres of their land; the local reclamation district allowed the new drainage system to use part of their ditches for outlets; a local town paid $1,200 for a connecting link in the drainage system; the county made legal advice available to the group; a local bank extended special credit for the work; the Navy constructed necessary ditches on its land; some funds were made available under the Agricultural Conservation Program for the feeder ditches; and the county furnished the necessary culverts where the ditches would cross the country roads. The technical assistance furnished for the drainage investigations and designs was made available through an agreement with the district. The farmers agreed to prepare the drained land so they could carry on a conservation program which required they do land leveling and the installation or revision of their farm irrigation system.

Publication of Soil Survey Reports Accelerated

Soil surveys were being made in over 2,600 soil conservation districts as a basis for conservation planning and as part of the National Soil Survey. Progress in converting soil conservation surveys to standard soil surveys in most States has been slow because of the need for additional correlation work. Twenty-two soil survey reports were published, including a soil map and text describing the soils and their use. Reports published to date total 1,638. At the present time 76 reports are awaiting publication.

Procedures were adopted during the 1954 fiscal year to complete map preparation work through the tint separation stage. This means that soil maps for publication will go directly to lithography and result in more rapid publication.

Snow Surveys and Water Supply Forecasting Data Reduced Impact of Drought and Floods

There are now 1,202 snow courses in the Western States network, including those in British Columbia, Canada. In the fiscal year 1954 some 899 snow surveyors (most of them only employed a few days each year) traveled a total of 43,000 miles by foot, over-snow machines, or aircraft, and made 49,000 individual snow measurements. Seasonal streamflow forecasts were made on all major streams of the West and many of the minor streams which are major sources of irrigation water for farmers and ranchers in soil conservation districts. Forecasts were made for 277 stations and over 20,000 copies of the forecasts were provided to the water users.

These measurements of snow pack showed that prospective water supplies for the Western United States in 1954 varied from ample supplies and possible floods on the northern section of the Columbia Basin to an extreme and severe water shortage in the Rio Grande in Colorado and New Mexico. The water shortage in the Rio Grande was forecast to be particularly critical with a combination of short snow pack and lack of water stored in reservoirs. This situation developed in part as a climax of a series of years of deficient runoff. This picture of low prospective runoff was forecasted to extend to a lesser extent to central Colorado, parts of Utah, Nevada, extreme southern Idaho, southeastern Wyoming, and parts of Arizona. The snow survey information enabled farmers, water-users associations, irrigation districts, municipalities, power companies, loan agencies, and others in the affected areas to take effective steps to lessen the impact of the water shortage on their economy. It also was useful in combating floods. For example, the snow survey leader at Boise, Idaho, early in the season (April 1, 1954) directed attention to a potential and virtually certain flood hazard on the Kootenai River of northern Idaho. In collaboration with the Rover Forecast Center of the U. S. Weather Bureau at Portland, Oregon, a joint forecast of the potential flood affecting the area around Bonners Ferry, Idaho was released April 1 and again on May 10, the latter containing a specific forecast of 35.5 feet river elevation at Bonners Ferry. With such advance warning Federal troops and heavy equipment were rushed to Bonners Ferry. The town was evacuated and dikes were reinforced. The river peaked at 35.55 feet on May 21, 1954. Only about 6,000 acres were

flooded as a result of dike failure. The forecast resulted in action to prevent a large amount of damage to agricultural lands and commercial and industrial property along the river.

14 Nurseries Disposed of During 1954

All but 10 of the 24 Soil Conservation Service operated nurseries were either closed or transferred to other agencies during the 1954 fiscal year. Of the 10 that were retained, 5 are operated by the Service and the remaining 5 by cooperating agencies under agreements and on an annual plan of work. Seed and plants of common species are no longer produced at these nurseries as it is expected that these will become available through commercial channels. Nursery facilities are to be entirely devoted to the testing and production of new and untried plant materials for further testing by cooperating agencies and on farms in Soil Conservation districts.

In the fiscal year 1954 the nurseries grew and distributed over 30 million trees and shrubs and approximately 400,000 pounds of grass and legume seed, mostly to soil conservation districts. A similar quantity of tree and shrub seedlings, too small for field planting, was left for disposition by cooperating agencies at the time responsibility for nursery operation was transferred to these agencies.

Special Plants to Control Erosion Located and Tested

Plant materials of all kinds, including trees, shrubs, grasses and legumes, are in constant demand to control erosion and effect better land use. This is true especially on critical areas such as shifting sands, steep hillsides, unstable stream and pond banks, and terrace outlets and waterways. Such sites and conditions require specialized materials and techniques. These the Service endeavors to supply through plant materials specialists who are in intimate touch with such needs and are constantly in search of plants and techniques to meet these needs. Such plants come from special strains found in native vegetation, from foreign introductions, and breeders materials at experiment stations. They are assembled at SCS and State cooperative nurseries, tested on nurseries, at experiment stations, and on farms, and increased through crop improvement associations, commercial and farmer seed growers, soil conservation districts and others.

One example of a grass that was developed in the above manner is creeping foxtail. This plant is still in the developmental stage for conservation trial and use. Plants from two separate introductions are being tested. One introduction came through a Russian immigrant who brought a hatful of seed with him and scattered it around a slough in central North Dakota in about 1900. The other came from the Plant Introduction Division at the Pullman, Washington, nursery where it was planted in about 1935. Both accessions seem to be doing equally well in the two areas and show promise for hay and pasture on wet lands. This foxtail grows on about the same sites as does Reed canary grass, but is less stemmy and hence favored for livestock feed.

Survey and Planning Accomplishments

The following tables show the major accomplishments of the Service in assisting soil conservation districts and other cooperators in the fields of surveys and planning. The various types of surveys are defined as follows:

Soil surveys are those where soil types and boundaries are determined in detail by actual field examination and where classification is in accordance with the standard nation-wide system of soil classification, to furnish information for conservation planning, land inventories, publication, and other purposes. Reconnaissance surveys are those where soil types are determined by observation with only random tests and provide data on soils which are adequate to delineate boundaries of problem areas and for broad program planning. Range surveys are those of vegetative range sites and physical conditions on grazing land, commonly used in the west to supplement, or, in lieu of, soil surveys.

SURVEYS:

Type of Survey	Unit	1954 Actual	Total as of 6/30/54	1955 Estimate	1956 Estimate
Soil surveys	Acres	34,834,475	455,896,394	38,000,000	40,000,000
Reconnaissance	Acres	817,277	152,450,009	1,200,000	1,500,000
Range	Acres	4,486,644	22,376,626	6,000,000	7,000,000

CONSERVATION PLANNING OF INDIVIDUAL FARMS AND RANCHES:

Explanation	Active District Cooperators		Net increase in SCD cooperators and basic plans
	Number	Acres	
	As of June 30, 1953		Fiscal Year 1953
No. soil conservation district cooperators	1,296,969	376,067,691	177,398
SCD cooperators having basic plans	951,935	262,620,796	3,994
No. basic plans fully applied	156,064	31,002,105	31,554
	As of June 30, 1954		Fiscal Year 1954
No. soil conservation district cooperators	1,454,287	423,690,086	157,318
SCD cooperators having basic plans	974,463	268,351,553	22,528
No. basic plans fully applied	162,336	34,571,990	6,272
	As of June 30, 1955(Est.)		Fiscal Year 1955 (Est.)
No. soil conservation district cooperators	1,618,000	471,000,000	163,713
SCD cooperators having basic plans	1,018,000	280,000,000	43,537
No. basic plans fully applied	194,000	41,000,000	31,664
	As of June 30, 1956(Est.)		Fiscal Year 1956 (Est.)
No. soil conservation district cooperators	1,788,000	520,000,000	170,000
SCD cooperators having basic plans	1,069,000	294,000,000	51,000
No. basic plans fully applied	234,000	50,000,000	40,000

GROUP ENTERPRISE PLANS: 1/

Item	Unit	1954 Actual	total as of 6/30/54	1955 Estimate	1956 Estimate
Group job planned	Number	1,707	14,265	1,800	1,800
Farms to be benefitted	Number	15,725	129,172	16,000	16,000
Area to be benefitted	Acres	1,200,558	10,948,839	1,250,000	1,250,000
Group jobs completed	Number	1,429	11,193	1,600	1,600
Farms benefitted	Number	14,264	92,507	15,000	15,000
Area benefitted	Acres	834,214	6,996,202	900,000	900,000

1/ See table c. below for types of group jobs involved.

Application of Practices

The following tables show some of the major conservation practices that were applied with technical assistance furnished by the Soil Conservation Service:

a. Practices applied on farms and ranches of soil conservation district cooperators

Type of Practices	Unit	1954 Actual	1955 Estimate	1956 Estimate
Contour farming	Acres	4,127,109	4,210,000	4,210,000
Cover cropping	Acres	4,839,091	4,935,000	4,935,000
Strip cropping	Acres	930,235	949,000	949,000
Seeding pasture and range	Acres	3,008,396	3,068,000	3,068,000
Tree planting	Acres	266,033	271,000	271,000
Farm and ranch ponds	Number	64,521	66,000	66,000
Terraces	Miles	47,791	49,000	49,000
Diversion channels	Miles	4,808	4,900	4,900
Farm drainage	Acres	1,577,760	1,610,000	1,610,000
Improved water application	Acres	949,680	968,000	968,000
Land leveling	Acres	375,093	382,000	382,000
Field windbreaks	Miles	2,018	2,060	2,060

b. Practices applied on farms and ranches of non-district Agricultural Conservation Program participants 1/

Type of Practices	Unit	1954 Actual	1955 Estimate	1956 Estimate
Terraces	Miles	3,543	3,366	3,189
Diversions and dikes	Miles	607	577	546
Land restoration	Acres	3,758	3,500	3,300
Sod waterways	Cu. Yds.	4,116,984	3,911,000	3,705,000
Outlets, flumes and chutes	Number	3,616	3,400	3,200

b. Practices applied on farms and ranches of non-district Agricultural Conservation Program participants - continued 1/

Type of Practices	Unit	1954 Actual	1955 Estimate	1956 Estimate
Erosion control dams	Number	1,402	1,300	1,260
Permanent riprap	Sq.Yds.	84,432	81,200	76,900
Contour strip cropping	Acres	44,341	42,100	40,000
Contour farming	Acres	457,870	435,000	412,000
Contour orchards and vineyards	Acres	10	9	8
Cross slope strip cropping	Acres	879	830	790
Cross slope farming	Acres	10,736	10,200	9,600
Stream-shore erosion control	Miles	88	83	79
Grazing land management	Acres	1,304,226	1,240,000	1,174,000
Stock water dams and ponds	Number	10,618	10,000	9,500
Reorganization of farm irrig. systems	Acres	221,107	210,000	199,000
Land leveling	Acres	288,795	274,000	260,000
Irrigation reservoirs	Number	529	500	480
Improved water application	Acres	8,058	7,600	7,200
Farm drainage	Acres	392,337	373,000	353,000
Land clearing	Acres	84,028	80,000	75,600
Water disposal areas	Acres	3,787	3,600	3,400

1/ Approximately 40 percent of the cost of this work is financed with funds available for work with "other cooperators" under "Conservation Operations" and 60 percent with funds advanced from the item "Agricultural Conservation Program" under the 5% transfer proviso contained in the annual appropriation Act.

c. Practices applied in group enterprises

Type of Practice	Unit	1954 Actual	Total as of 6/30/54	1955 Estimate	1956 Estimate
Ditch and canal excavation	Miles	1,324	12,819	1,350	1,350
	Cu.Yds.	11,340,270	108,467,959	11,560,000	11,560,000
Spoil bank leveling	Cu.Yds.	4,966,592	50,358,566	5,000,000	5,000,000
Levees and dikes	Miles	23	371	25	25
	Cu.Yds.	410,033	5,225,863	445,000	445,000
Channel stabilization	Miles	13	330	15	15
Drainage and irrigation pipe	Lin.Ft.	965,091	4,075,440	970,000	970,000
Reservoirs	Number	20	170	25	25
	Acre Ft.	10,048	72,465	12,000	12,000
Other structures	Number	2,076	17,724	2,080	2,080

Study of Rate of Progress in Planning and Applying Soil Conservation Practices

During the past year a study was conducted of the rate of progress being made in the planning and application of soil and water conservation practices on farms and ranches in a total of 378 soil conservation districts. These districts included three specific age groups; one a group of 93 districts which began operation in 1939; a second group of 127 districts which began operation in 1943; and a third group of 158 districts which began operations in 1948. The study was based on reports of such cumulative accomplishments as were available at national headquarters of the Soil Conservation Service as of December 31, 1952.

In the 14-year age group of 93 districts which were located in 24 States and comprised about 54.9 million acres of land in farms, 23,386,026 acres (or about 43% of the total) had been included in basic farm or ranch conservation plans as of December 31, 1952. The cumulative acres on which conservation practices had been applied was 16,384,670 or about 30% of the total land in farms. This shows an average annual treatment rate of approximately 2 percent per year, or 50 years in which to apply conservation on all the land in farms in this group of districts. In 67 of the 93 districts one-half or less of the total land in farms was included in basic conservation plans, and in 85 of the 93 districts, one-half or less of the total land in farms had conservation measures applied.

In the 10-year age group of 127 districts which were located in 33 States and comprised about 43.9 million acres of land in farms, 15,449,474 acres (or about 35% of the total) had been included in basic farm or ranch conservation plans. The cumulative acres on which conservation practices had been applied was 10,194,521, or about 23% of the total land in farms. This likewise indicates, after ten years of operation, an average annual treatment rate of approximately 2 percent per year. In 101 of the 127 districts one-half or less of the total land in farms were included in basic conservation plans, and in 116 of the 127 districts one-half or less of the total land in farms had conservation measures applied.

In the 5-year age group of 158 districts, which were located in 37 States and Alaska and Hawaii and comprised about 59 million acres of land in farms, 10,814,595 acres (or about 18% of the total) had been included in basic farm or ranch conservation plans. The cumulative acres on which conservation practices had been applied was 6,102,359 or about 10% of the total land in farms. As in the two other age groups, after five years of operation, the rate of application of conservation practices in this group of districts averaged about 2 percent per year.

Comparisons of trends by age groups were made for the first five-year periods of district operations in the 14, 10, and 5-year age groups for similarity, and also with each other after five or ten years of operation. In each of the three groups, the percentage of acres planned and acres treated after five years of operation were quite similar. The 1939 and the 1948 groups were almost identical. The 1939 and 1943 age groups had

also planned and treated almost identical percentages of their total land in farms after ten years of operation. While this study of progress would indicate an average treatment rate of 2% per year for all of the soil conservation districts, it does not reflect the continuing job of program maintenance and improvement. Past Service records did not provide sufficient data to prepare such a report, but new reporting procedures recently placed into effect will do so. The new reporting system will provide each year, information for each soil conservation district as to (1) the conservation needs by major practices, and land-use adjustments, (2) practices applied and now on the land, (3) conservation work remaining to be done, and (4) the estimated goals to be accomplished in the succeeding year. At the end of the 1955 fiscal year, the Service will have individual district and state totals showing accomplishments to date and conservation needs remaining. From these new reports, the status of farm and ranch conservation planning and land treatment work in each soil conservation district in the United States and its territories can be determined.

In connection therewith it should be noted that the farm conservation planning and land treatment job remaining to be done is a continually changing work load. In quite a number of cases assistance given in planning and establishing conservation practices on a farm or ranch may have to be furnished again. This is due to changes in farm ownership estimated at 3 to 5 percent annually, new land development through drainage, clearing, etc., changes in type of agriculture such as shifting from cropland to grassland or from dryland to irrigation farming, or improved technology. Furthermore, conservation farming involves working with people -- the landowners, their tenants, or their farm operators. As their wishes and desires change, the conservation program for a farm or ranch may also change. Sometimes there are combinations made of several tracts, or large tracts are subdivided into several farms. Any of the conditions mentioned may require re-planning the soil and water conservation and land-use program for the land involved. Service reports of conservation needs and accomplishments each year will reflect all these changes. As the number of cooperators having basic farm or ranch conservation plans applied increases, there develops a greater work load of program improvement and maintenance of practices. All of this affects the rate of progress in getting conservation treatment applied to all agricultural land in the soil conservation districts.

Comprehensive Operations Plan Developed and Installed

A complete system of operations planning was developed and installed in the Service in 1953. Annual plans of work for States, areas, and work units are now developed each year, just ahead of the beginning of the calendar year. This is systematically done nationwide. Washington Field Representatives and other staff people work with State Conservationists at scheduled planning conferences to develop State plans plus general schedules for carrying them out. Similar work is done by States with Area Conservationists, and by areas with Work Unit Conservationists. These plans provide for all phases of work and are followed up by inspections, similarly systematized, and by reviews of accomplishments.

Additional Training Centers Established to Increase Employee Proficiency

For a number of years, the Service has operated a very successful training center for both professional and sub-professional employees at Coshocton, Ohio. Such training has speeded up the time in getting new men into full production. It has also resulted in saving time of older field technicians and has made possible a more thorough treatment of subject-matter training by the best qualified technical specialists in the field.

Because of demonstrated efficiency of the Coshocton training center, additional ones have been established in various parts of the country in order to provide in-Service group training to all new professional and sub-professional employees on a Servicewide basis. The professional training involves 4 to 5 weeks and sub-professional training involves three weeks, with some modification in a few of the smaller centers. Training centers are now operating at Coshocton for the Northeastern and Cornbelt States; at Athens, Georgia for the Southeast; at Ft. Robinson, Nebraska for the Northern Plains States; at Lubbock, Texas for part of Texas and adjoining States; and at Huntsville, Harlingen, Terrell, and Bryan, Texas (on a smaller scale) for the rest of the State.

Reorganization of SCS Successfully Implemented in 1954

The reorganization of the Soil Conservation Service, as announced on November 2, 1953 in Supplement 4 of Secretary's Memorandum No. 1320, was completed before the close of the 1954 fiscal year. This reorganization eliminated Regional Offices and placed greater responsibility for program formulation and execution in the State Offices. Certain of the functions of the Regional Offices, such as program coordination, inspection, supervision of staffs of technical specialists serving groups of States, etc., of course, were assumed by the Washington Office.

Transfer of personnel to the State Offices, to the Washington Office, and to the Washington Office staff specialists positions located in the field, took place as rapidly as was feasible over a period of about six months. About 800 employees were involved in these moves.

Most technical staff transfers were completed by April, 1954. Transfer of administrative staffs and functions to the State Offices took place over a period of three months, beginning in April, 1954. As rapidly as the State Office staffs were completed, necessary training in new duties and procedures was given, and required authorities were delegated, the State Offices took over responsibility for budgeting, accounting, personnel, procurement, and other administrative functions. As of June 30, 1954, all States had assumed full operating responsibilities assigned to them under the reorganization plan. Considering the size of the task (which required complete realignment of functions, new job descriptions, development of a new accounting system, revision of handbooks, extensive training details, the transfer of many employees, etc.) and complexity of problems involved, the transition to a Washington-State Office operating basis was effected with a minimum of disruption of service being rendered to farmers and ranchers.

(b) Watershed Protection

Appropriation Act, 1955	$5,500,000
Supplemental appropriation for 1955 (Supplemental Appropriation Act, 1955)	1,750,000
Activities transferred in the 1956 estimates to "Salaries and expenses, Office of the Solicitor, Agriculture" for legal assistance	-40,000
Base for 1956	7,210,000
Budget Estimate, 1956	11,000,000
Increase (for the installation, on a cost-sharing basis with local interests, of planned upstream watershed improvement measures in small watersheds)	+3,790,000

PROJECT STATEMENT

Project	1954	1955 (estimated)	Increase	1956 (estimated)
Watershed protection	$5,000,000	$7,210,000a/	+$3,790,000(1)	$11,000,000

a/ In addition, $682,718 is available from prior year balance.

INCREASES

(1) An increase of $3,790,000 for this item consisting of the following:

(a) An increase of $500,000 to accelerate in line with the 5 year schedule, the installation of upstream watershed improvement measures in the "Pilot" Demonstration Watershed Protection projects in which such work is already in progress.

Need for Increase: With the initiation of the pilot demonstration watershed program at the beginning of the 1954 fiscal year under authority of Public Law 46, 74th Congress, immediate action was taken to prepare work plans for and to accelerate land treatment work in the designated watersheds. On the basis of preliminary work plans some works of improvement were initiated on all the watersheds. Preparation of final work plans has now been completed for all of the 60 active pilot watersheds. These watersheds are planned for completion within a five year period and are intended to provide demonstrations of the effectiveness of coordinated upstream watershed improvement measures installed in cooperation with local interests, in conserving soil and water resources, retarding waterflow, controlling run-off and erosion, and reducing sedimentation and flood damage. The total estimated cost of the program for these demonstration watersheds is $28,706,000. The sum of $5,000,000 was appropriated in 1954 to initiate operations, and an additional $5,500,000 was appropriated for the 1955 fiscal year. The Estimates for 1956 include $6,000,000 for the work in these watersheds. There will remain a little over $12,000,000 to be appropriated for the completion of these projects in 1957 and 1958.

The $500,000 increase in appropriation for 1956 would enable the Department to increase the rate of installation of measures in order to permit completion of the work within the planned five-year construction period. The funds would be used primarily for the award of construction contracts for planned works of improvement (debris and desilting basins, waterflow-retarding and gully control structures, floodways, stream channel improvements, diversions, etc.)

(b) An increase of $3,290,000 to plan for and initiate works of improvement in small watersheds as authorized by Public Law 566, 83rd Congress.

Need for Increase: The Watershed Protection and Flood Prevention Act of 1954 (Public Law 566, 83rd Congress) provides the basis for cooperation between the Department and the States and local interests in installing works of improvement in small watersheds to prevent erosion, flood water, and sediment damages and to further the conservation, development, utilization, and disposal of water. The local people must furnish all easements and rights-of-way and must bear an equitable share of the cost of installing improvement measures. Where any water storage capacity is provided in structures for purposes other than flood prevention and features related thereto, the local interests must bear all the construction cost of providing such added capacity. They must also assume all costs of operation and maintenance of the measures installed on other than Federally-owned lands.

Funds amounting to $1,750,000 were provided in the Supplemental Appropriation Act, 1955, largely to conduct necessary field examinations of watersheds for which project applications were received, to prepare detailed work plans of watersheds approved for planning, and to carry out such river basin investigations as may be found necessary for proper coordination of planned works of improvement in small watersheds with projects or programs of other agencies or organizations in larger watersheds or regional areas. There is, of course, a continuing need for this investigation and planning work under the Watershed Protection program.

After project work plans are approved by cooperating local agencies and the Secretary, and their review by other agencies, approval by Congress as required, or the specified waiting period has expired, whichever is applicable, works of improvement may be initiated. A small sum has been reserved in the current fiscal year to permit beginning installation of works of improvement on some watersheds that may be approved and reach the construction stage quickly.

The increase of $3,290,000 for 1956 would be used (1) to establish two additional work planning parties that are urgently needed, (2) to accelerate going conservation land treatment work in the watershed areas, (3) to begin installation of structural and other works of improvement in such areas, and (4) to secure needed economic and hydrologic data from the Agricultural Research Service, the U. S. Weather Bureau, and the U. S. Geological Survey.

Plan of Work: Bids would be solicited and contracts awarded for works of improvement on the pilot demonstration watersheds as rapidly as detailed designs and specifications are prepared and local interests secure necessary easements, rights-of-way, and planned cash contributions. Preparation of designs and engineering supervision over construction work would be provided by Service staff already on the job.

Installation of improvement measures would be undertaken in 1956 on about 40 of those watersheds that are planned and approved for installation of works of improvement under authority of Public Law 566, 83rd Congress. The estimates propose a resident construction engineer and an engineering aid for each watershed project to provide necessary engineering supervision over the construction by private contractors of the planned works of improvement. A soil conservationist and a conservation aide are also provided for each project to provide technical assistance in accelerating the planning and establishment of needed land treatment measures. The actual personnel to be assigned to any individual project can only be determined after the work plan has been prepared and approved and the amount and timing of work determined. When improvement measures are to be installed on lands under the jurisdiction of the Forest Service or operated in connection therewith, such work would be done under the supervision of the Forest Service.

The Agricultural Research Service would undertake the collection and analysis of the economic data necessary to provide the planning technicians with reliable economic evaluation needed in planning the treatment of watershed lands. Arrangements would also be made with the U. S. Weather Bureau and the U. S. Geological Survey to provide, on a reimbursable basis, hydrologic data needed for planning and program evaluations.

CHANGES IN LANGUAGE

The estimates include a proposed change in the language of this item as follows (new language underscored):

> For expenses necessary to conduct surveys, investigations, and research and to carry out preventive measures, including, but not limited to, engineering operations, methods of cultivation, the growing of vegetation, and changes in use of land, in accordance with the Watershed Protection and Flood Prevention Act, approved August 4, 1954 (Public Law 566), and the provisions of the Act of April 27, 1935 (16 U.S.C. 590a-590f), to remain available until expended, * * *

The proposed change in language is for the purpose of including reference to the Watershed Protection and Flood Prevention Act, approved August 4, 1954, under which the Department will cooperate with States and local agencies in the planning and carrying out of works of improvement in additional watersheds for flood prevention (including structural and land-treatment

measures) and the agricultural phases of the conservation, development, utilization, and disposal of water. Reference to the Act of April 27, 1935 is retained since that Act is the authority under which activities on the 60 active pilot demonstration watersheds, on which work was initiated in the fiscal year 1954, will be completed.

STATUS OF PROGRAM

Recent Progress:

Allocation of Watershed Protection Funds

Funds available for 1954 and 1955, and proposed for 1956 for the planning and installation of watershed protection works of improvement are allocated to the cooperating agencies in the Department, as follows:

Agency	1954 Obligations	1955 Estimate	1956 Estimate
Soil Conservation Service	$4,039,705	$7,352,295	$10,405,000
Forest Service	257,577	490,423	495,000
Agricultural Research Service	20,000	50,000	100,000
Total	4,317,282	7,892,718	11,000,000

Preparation of Watershed Work Plans

Preparation of final work plans for the 60 active pilot demonstration watersheds have been essentially completed. Initation of work on planning the Muster Creek, Montana, watershed has been delayed until the spring of 1955 at the request of the project sponsors. The work plans prepared specify the land treatment and water control measures that are necessary to stabilize the watershed lands and reduce floodwater and sediment damage. Each plan also includes a schedule for installation of the recommended watershed protection measures.

As additional watersheds are approved for planning under authority of the Watershed Protection and Flood Prevention Act (Public Law 566, 83rd Congress), work plan parties will be assigned to assemble necessary hydrologic, engineering, economic, and sedimentation data and to prepare the watershed work plans. These plans will provide the basis for approval or disapproval of the projects for installation of watershed works of improvement for flood prevention and the agricultural phases of conservation, development, utilization, and disposal of water. The work plans will include planned works of improvement, cost-benefit data, cost estimates, and cost-sharing arrangements in connection with installation of measures, an installation schedule, and arrangements for local assumption of responsibility for operating and maintaining the works of improvement installed. It is estimated that about 25 watershed work plans will be prepared in the 1955 fiscal year for projects requested to be established under authority of Public Law 566, 83rd Congress, and that approximately 45 such work plans will be prepared in 1956.

Specialists from the Forest Service will be assigned to work plan parties as needed to handle the forestry aspects of work plan preparation for which that Service is responsible.

The Agricultural Research Service has rendered assistance with economic evaluations in connection with preparation of work plans for the pilot demonstration watersheds and in training SCS field personnel in this work. Under a working agreement between that agency and the Soil Conservation Service, the ARS will provide economic evaluations of plans for works of improvement for watersheds which will be designated under Public Law 566. That agency will also furnish assistance in the preparation of recommendations to the Department in connection with the economic aspects in the development of policies and procedures under the Watershed Protection and Flood Prevention Act; assist in the review and analysis of the economic aspect of resource development proposals; and assist on special economic evaluation problems which may develop in connection with particular watershed projects, or as they pertain to local areas or interested local organizations or groups.

Pilot Watersheds Selected for Installation of Protection Program

The following watersheds were selected for installation of needed watershed protection measures under the pilot watershed or demonstration program inaugurated by the 1954 Department of Agriculture Appropriation Act:

Watershed	State	County	Estimated Total Federal Cost
Active Projects			
Adobe Creek	California	Lake	$488,875
Aiken Creek	Kansas	Chautauqua & Montgomery	109,829
Baboosic River	New Hampshire	Hillsboro	71,177
Ball Creek	New York	Chautauqua	75,374
Brownell Creek	Nebraska	Otoe	421,237
Kiowa Creek	Colorado	Elbert, El Paso, Arapahoe, Adams, Weld, Morgan,	560,177 2/
Calaveras Creek	Texas	Bexar	355,629
Calleguas Creek	California	Ventura & Los Angeles	1,510,000
Chippewa River Tribs. & Hawk	Minnesota	Swift, Chippewa & Kandiyohi	1,114,775
Cory Creek	Pennsylvania	Tioga	100,808
Cow Bayou	Texas	McLennan & Falls	716,595
Dean Creek	New York	Tioga	111,897
Double Creek	Oklahoma	Washington and Osage	314,079
Dry Creek	Idaho	Ada and Boise	252,717
Dry Creek	Nebraska	Red Willow & Frontier	248,513
East Willow Crk.	Minnesota	Fillmore	336,652
East Fork of Falling River	Virginia	Appomatox & Campbell	225,821
E. Branch of S. Fork of Blackwater	Missouri	Johnson	278,851
Escondido Creek	Texas	Karnes	644,326
Flat Creek	Indiana	Pike	262,831

Watershed	State	County	Estimated Total Federal Cost	
Floyd R., Tribs. upper Plymouth Creek & Nassau Watershed	Iowa	Plymouth and Sioux	150,604	
Great Brook	New York	Chenango	98,556	
Green Creek	Texas	Erath	729,003	
Hadley Creek	Illinois	Pike and Adams	1,153,485	
Honey Creek	Iowa	Lucas	199,482	
Indian Creek	Nebraska	Gage & Lancaster	855,514	
Little Delaware-Mission Creeks	Kansas	Brown, Jackson, Atchison	225,374	
Little Hoosick above Berlin	N.Y. & Mass.	Rensselaer & Berkshire	359,524	
Lost Creek	Missouri	Lincoln	202,814	
Lost Creek	Kansas	Lincoln	147,182	
Mission Creek	Washington	Chelan	336,689	
Money Creek	Illinois	McLean	233,625	
Mule Creek	Iowa	Mills	384,960	
Muster Creek	Montana	Custer	300,000	3/
N. Fork of the Broad River	Georgia	Stephens & Franklin	701,536	
N. Fork of the Rough River	Kentucky	Breckenridge	325,381	
Old Tom Creek	Illinois	Warren & Henderson	205,314	
Pequest (above USGS Gaging Sta)	New Jersey	Sussex & Warren	649,929	
Pleasant Creek	Utah	Sanpete	292,720	
Plum Creek	Kentucky	Shelby, Spencer, Jefferson & Bullitt	490,345	
Red River, Upper	Kentucky	Morgan & Wolfe	580,586	
Rocky Fork - Clear Creek	Ohio	Highland	253,474	
Salem Fork of Ten Mile Creek	W. Virginia	Harrison	253,556	
Sandia Mt. Trib.-Bernalillo Watershed	New Mexico	Sandoval & Bernalillo	194,890	
Santaquin	Utah	Utah	85,839	
Scott Watershed	S. Dakota	Union	87,697	
Six Mile Creek	Arkansas	Logan & Franklin	1,548,014	
Snipe Creek	Kansas	Marshall	138,922	
Switzler Creek	Kansas	Osage	189,127	
Third Creek	N. Carolina	Alexander, Iredell, Rowan	551,724	
Tongue River	N. Dakota	Cavalier and Pembina	2,039,092	
Twelve Mile Crk.	S. Carolina	Pickens	776,797	
Upper Green	Kentucky	Lincoln and Casey	362,549	
Upper Hocking R. incl. Hunter's Run	Ohio	Fairfield	683,000	
Upper Hondo, Tributaries of	New Mexico	Lincoln and Otero	750,000	

Watershed	State	County	Estimated Total Federal Cost
Upper Salt Swedeburg Tribs. of Salt Creek	Nebraska	Lancaster & Saunders	1,563,611
Walnut Creek	California	Contra Costa	2,237,335
West Fork of Kickapoo	Wisconsin	Vernon and Monroe	243,495
White Tanks	Arizona	Maricopa	218,000
Wolf River Tribs. Mary's & Sand Creeks	Tennessee	Shelby and Fayette	383,243
Projects Discontinued 4/			
Bill's Creek	Kansas	Jackson	21,244
Spring Valley Crk.	Washington	Walla Walla	4,293
Projects Designated But Not Activated 5/			
Jack's Run	Pennsylvania	Westmoreland	-0-
S. & N. Fork of the Crow	Minnesota	Kandiyohi, Meeker, Stearns, Pope, Renville	-0-
Squaw Peak-S.Mt.	Arizona	Maricopa	-0-
		Grand Total	29,408,688 1/

1/ These are the latest work plan figures. As the program develops and work plan cost estimates are modified in accordance with the scheduled works of improvement, it is expected that cost of the total program will not exceed the original estimate of $28,706.000.

2/ Buckhorn and South Platte Tribs., Colorado redesignated Kiowa Creek Watershed, August 1, 1954.

3/ Muster Creek, Montana. Initiation of project delayed for one year, to April 1955.

4/ Costs shown were for initial investigations and planning of work needed in the watersheds. The local sponsoring agencies decided against going ahead with the works of improvement at this time so the project designation was canceled; no further work on the projects under this program is anticipated.

5/ No qualified local agencies were willing to sponsor these projects consequently no work has been initiated.

Installation Activities of the Soil Conservation Service:

Local Cooperation

The 60 active pilot demonstration watersheds are sponsored or co-sponsored by soil conservation districts. These districts provided local leadership

to accelerate the planning and installation of land treatment measures. They have also accepted responsibility for obtaining necessary easements and rights-of-way for structural and other works of improvement and for operating and maintaining these installations. Preliminary work plans show that local interests will bear approximately 52 percent of watershed works of improvement costs.

Watershed Improvement Measures

The following tables show the progress in completing soil surveys and conservation plans on the farms and the major watershed improvement measures planned and installed cooperatively by the Soil Conservation Service and local cooperators in pilot demonstration watersheds. Structural and land stabilization measures are being installed primarily by local contractors. The Service is also providing additional technical assistance to farmers and ranchers in planning and establishing soil and water conservation practices and sound land use. The purpose is to accelerate the application of land treatment measures which contribute to flood prevention and thus provide necessary protection to structural and other works of improvement installed primarily for flood prevention.

Soil Surveys and Farm Conservation Plans:

Item	Totals in Project Area (Including "Conservation Operations")		1954 (Actual) with Watershed Protection Funds
	1954 Actual	Cumulative June 30, 1954	
Soil surveys (Acres)	513,056	1,810,126	252,507
Total number cooperators	1,334	5,746	1,140
Basic conservation plans:			
Number	420	3,862	290
Acres	57,997	755,893	43,965

Works of Improvement:

Measure	Unit	Estimated needs shown in work plan	Accomplished as of June 30, 1954	1954 (Actual) with Watershed Protection Funds
Land Treatment Measures:				
Contour farming	Acre	251,842	20,593	6,896
Cover cropping	Acre	143,382	19,034	824
Crop residue management	Acre	484,847	68,624	2,244
Strip cropping	Acre	109,187	8,850	727
Pasture seeding	Acre	114,782	7,734	913
Range seeding	Acre	41,219	5,695	59
Range improvement	Acre	178,337	23,820	2,550
Terraces	Mile	20,228	1,477	346
Diversions	Mile	1,872	241	7
Farm ponds	No.	3,320	284	51
Waterway development	Acre	18,928	2,252	534
Tree planting	Acre	26,867	779	489
Woodland protection	Acre	75,307	2,758	2,100
Wildlife area improvement	Acre	7,491	348	2
Erosion cont. struc.	No.	14,732	553	9
Seeding permanent hay	Acre	5,661	15	13

Works of Improvement:

Measure	Unit	Estimated needs shown in work plan	Accomplished as of June 30, 1954	1954 (Actual) with Watershed Protection Funds
Structural and Land Stabilization Measures:				
Floodwater-retarding structures	No.	565	---	---
	Ac.Ft.	185,489	---	---
Stabilizing and sediment control:				
(a) Structures	No.	2,241	287	287
(b) Silt and debris basins	No.	362	---	---
Subwatershed waterway improvement:				
(a) Outlet construction	Mile	391	---	---
(b) Grassed waterways	Acre	832	6	6
Stream channel improvement:				
(a) Channel stabilization	Mile	159	---	---
(b) Channel improvement	Mile	536	---	---
Diversion ditches and dikes:				
(a) Diversion construction	Mile	81	---	---
(b) Levees and dikes	Mile	11	---	---
	Cu.Yd	385,322	---	---
Floodways:				
(a) Channel execavation	Mile	50	---	
	Cu.Yd.	2,101,815	---	
Stabilization of critical areas:				
(a) Roadside erosion control	Mile	591	28	28
(b) Revegetation:				
1. Grasses and legumes	Acre	23,674	553	553
2. Woody plants	Acre	19,925	788	788

Preparation for Program Evaluation

Arrangements have been made with the U. S. Geological Survey to secure from that agency, on a reimbursable basis, certain equipment, services, and data which will enable the Soil Conservation Service to evaluate the effectiveness of upstream watershed improvement measures in retarding waterflow, controlling runoff and erosion, and reducing sedimentation and flood damage. The Geological Survey will construct or install stream-gaging and sediment-sampling stations, water-level recorders, crest gages etc. They will collect data recorded on instruments, change charts, main-

tain instruments and facilities, take sediment samples and provide laboratory analysis of them and perform necessary compilation and analysis of observed and recorded data.

Reimbursable arrangements have also been concluded with the U. S. Weather Bureau to install, inspect, and maintain 63 recording rain gages and 109 standard rain gages.

Status of Work on Individual Demonstration Watersheds

The following statements show the major flood prevention measures planned for installation by the Soil Conservation Service and local cooperators in the individual pilot demonstration watersheds and the progress on works of improvement made as of December 1, 1954:

White Tanks, Arizona. All construction work on this project was completed in July 1954. Works of improvement primarily for flood prevention consisted of 2 earth-fill floodwater-retarding structures (2,655 and 1,026 acre feet), 6 debris and desilting basins, and 11 miles of diversion dikes and ditches. All planned land treatment measures which contribute to flood prevention have been applied by the sponsors. The local people paid $215,537 and the Federal Government $192,088 of the total installation costs on this project.

Six Mile Creek, Arkansas. The major flood prevention measures planned to be installed in this watershed are 26 floodwater-retarding structures and 22.9 miles of stream channel improvement. Good progress has been made. Six floodwater-retarding structures representing 5,661 acre feet of floodwater storage capacity have already been installed. Contracts for construction of 5 additional floodwater-retarding structures will be awarded this fiscal year. Progress on establishment of land treatment measures which contribute to flood prevention has been retarded somewhat by three consecutive years of drought. However, the key land treatment practices are about on schedule since farmers have concentrated on pasture and feed programs.

Adobe Creek, California. The major flood prevention measures planned for installation in this watershed are 2 floodwater-retarding structures and 6.46 miles of stream channel improvement. None of these measures have yet been installed. Considerable difficulty is being experienced in obtaining easements for the 2 structures which is the main part of the work on this project. Land treatment measures which contribute to flood prevention are being applied to farm lands at a satisfactory rate.

Calleguas Creek, California. The major flood prevention measures planned for this watershed are 8 floodwater-retarding structures, 8 stabilizing and sediment control structures, 163 debris basin and channel grade stabilization structures, 19.5 miles of diversion ditches and dikes, 8 miles of streambank stabilization, and 39.6 miles of channel capacity improvement. The following measures were completed or under

construction as of November 30, 1954: 8 stabilization and sediment control structures, .7 of a mile of channel capacity improvement and 1.6 miles of streambank stabilization. Establishment of land treatment measures which contribute to flood prevention is progressing satisfactorily.

Walnut Creek, California. The major flood prevention measures planned for this watershed are 164 stabilizing and sediment control structures, 9.68 miles of streambank and channel stabilization and 43.9 miles of channel capacity improvement. Five drop spillway structures and 0.2 of a mile of streambank stabilization have already been installed. The program of applying land treatment measures which contribute to flood prevention is progressing satisfactorily.

Kiowa Creek, Colorado. The major flood prevention measures planned for this watershed are 35 floodwater-retarding structures, 6 stabilizing and sediment control structures, and 1.2 miles of stream channel improvement. Four floodwater-retarding structures are now under construction. A meeting with local cooperators was held December 1, 1954, at which time plans were laid to reemphasize speed-up establishment of land treatment measures which contribute to flood prevention. This work has been delayed due to drought.

North Fork of the Broad River, Georgia. The major flood prevention measures planned for this watershed are 10 floodwater-retarding structures, 15 stabilizing and sediment control structures, 40 miles of stream channel improvement, 96 miles of roadside erosion control, and stabilization of 3,666 acres of critical runoff and sediment producing area. Work completed includes construction of 3 floodwater-retarding structures, one mile of channel improvement, and revegetation of 210 acres of critical sediment-producing area. The longest and most severe drought on record has materially retarded application of vegetative control measures on this project.

Dry Creek, Idaho. The major flood control measures planned for this watershed are 37 stabilizing and sediment control structures, 7 miles of stream channel improvement, and 3 1/2 miles of channel capacity improvement. Installation of these measures has proceeded according to schedule with 6 six-foot drop structures already completed and functioning. No land treatment measures which contribute to flood prevention were scheduled for application during the 1954 season, but 20 acres of range actually were reseeded. The planned range management program is proceeding as satisfactorily as it can pending the construction of structural measures necessary to a sound program.

Hadley Creek, Illinois. The major flood prevention measures planned for this watershed are 4 floodwater-retarding structures, 331 stabilizing and sediment control structures, 80 miles of subwatershed waterway improvement, 1.5 miles of stream channel improvement, and 21 miles

of diversion ditches and dikes. Four drop inlet structures are now under construction. The application of land treatment measures which contribute to flood prevention is proceeding satisfactorily.

Money Creek, Illinois. The major flood prevention measures planned for this watershed are 93 stabilizing and sediment control structures, 12 miles of waterway improvement, and 2.7 miles of diversion ditches and dikes. Large absentee ownership and high tenancy in this area and the fact that it is a cash grain area and one of high agricultural income has definitely tended to retard progress in getting watershed protection treatment measures applied. The problem in this watershed is primarily one of gully stabilization. Farmers have been rather slow to recognize the need for controlling this problem along with the job of establishing land treatment measures which contribute to flood prevention as long as they are getting a relatively high corn and soy bean yield.

Old Tom Creek, Illinois. The major flood prevention measures planned for this watershed are 26 stabilizing and sediment control structures and 12.4 miles of waterway improvement. One floodwater-retarding structure, 1 notch dam, and 1 drop spillway have already been constructed. Establishment of land treatment measures which contribute to flood prevention is progressing satisfactorily.

Flat Creek, Indiana. The major flood prevention measures planned for this watershed are 2 floodwater-retarding structures, 52 stabilizing and sediment control structures, 16.2 miles of waterway improvement, 7.5 miles of stream channel improvement, 27 miles of roadside erosion control, and stabilization of 328 acres of critical runoff and sediment-producing area. Three stabilizing and sediment control structures have been completed. An additional contract will be awarded approximately February 1, 1955 for 6 stabilizing structures. One of the problems that has retarded establishment in this project of land treatment measures which contribute to flood prevention has been the rather intensive drought in southern Indiana this past summer and fall.

Floyd River Tributaties, Iowa. The major flood prevention measures planned for this watershed are 6 stabilizing and sediment control structures. None of these structures has been completed nor is any yet specifically scheduled for construction. The land treatment measures which contribute to flood prevention that have been established to date include 900 acres of contour farming, 17.5 miles of terracing, 3.5 acres of waterway development and 11,855 lineal feet of tile drains in connection with waterway development.

Honey Creek, Iowa. The major flood prevention measures planned for this watershed are 40 stabilizing and sediment control structures, 3.6 miles of waterway improvement, 14 miles of roadside erosion control, and stabilization of 40 acres of critical runoff and sediment-producing area. Four structures have been completed and 2 drop inlet structures are under construction. Three-quarters of a mile of channel improvement has also been completed. Land treatment measures which contribute to flood prevention are being applied at the rate scheduled in the project work plan.

Mule Creek, Iowa. The major flood prevention measures planned for this watershed are 27 stabilizing and sediment control structures, 8.6 miles of waterway improvement, and 14 miles of roadside erosion control. Three drop inlet structures have been completed and two contracts have been awarded for construction of 7 drop inlet structures. Since establishment of the project an additional 225 acres of contour farming, 17 miles of terracing, 1.8 miles of diversion terrace, and 10 acres of farm waterway have been established and 1,315 acres of farmland planned for conservation. Extensive amounts of land treatment measures which contribute to flood prevention had already been established prior to initiation of the watershed protection project.

Aiken Creek, Kansas. One floodwater-retarding structure is the only flood prevention measure planned and it has been completed. Severe drought slowed down application in 1954 of land treatment measures which contribute to flood prevention. It is expected, however, that a substantial amount of the necessary land treatment measures will be applied within the next three years.

Little Delaware-Mission Creeks, Kansas. The major flood prevention measures planned for this watershed are 8 floodwater-retarding structures, 25 stabilizing and sediment control structures, and 6.4 miles of waterway improvement. Three floodwater-retarding structures and 2 stabilizing and sediment control structures have been completed. One floodwater-retarding structure and 9 stabilizing and sediment control structures have been planned for construction next spring and summer. Excellent progress is being made on the establishment of land treatment measures which contribute to flood prevention.

Lost Creek, Kansas. The major flood prevention measures planned for this watershed are 3 floodwater-retarding structures, 5.5 miles of channel capacity improvement, and 6.3 miles of floodways. All easements for the 3 floodwater-retarding structures have been obtained by the local sponsoring organization. It is planned to begin construction on one structure next spring. Application of land treatment measures which contribute to flood prevention has been accelerated, particular attention being given to shaping waterways and building terraces. Serious drought conditions in 1953 and 1954 hindered establishment of grasses in waterways and pasture seeding.

Snipe Creek, Kansas. The major flood prevention measures planned for this watershed are 13 floodwater-retarding structures and 7 stabilizing and sediment control structures. Three floodwater-retarding structures have been completed. Two additional floodwater-retarding structures are planned for construction next spring. Excellent progress is being made in the establishment of land treatment measures which contribute to flood prevention.

Switzler Creek, Kansas. The major flood prevention measures planned for this watershed are 5 floodwater-retarding structures. Construction has been completed on one of these structures. Two additional structures are planned for construction next spring. Three years of serious drought have followed the floods of 1951 which has not been favorable to establishment of treatment measures which contribute to flood prevention.

North Fork of the Rough River, Kentucky. The major flood prevention measures planned for this watershed are 2 floodwater-retarding structures, 10 miles of waterway improvement, 5 miles of roadside erosion control, and stabilization of 6,057 acres of critical runoff and sediment-producing area. This program is on schedule. One floodwater-retarding structure and 5 miles of roadside erosion control have been completed and 314 acres of grasses and legumes have been established in sediment-producing areas. Land treatment measures applied to date include 405 acres of pasture seeding and 493 acres of contour farming. Farm planning assistance has been given on 5,487 acres.

Plum Creek, Kentucky. The major flood prevention measures planned for this watershed are 13 floodwater-retarding structures, 95 miles of waterway improvement, 21 miles of stream channel improvement, 12 miles of roadside erosion control, and revegetation of 450 acres of critical sediment-producing area. One floodwater-retarding structure has been completed, contracts have been awarded for two others, plans are complete for a fourth structure, and planning is in progress for three additional structures. In addition 3 miles of waterway improvement have been completed. Application of land treatment measures which contribute to flood prevention is on schedule.

Red River, Kentucky. The major flood prevention measures planned for this watershed are 185 miles of stream channel improvement, 51.3 miles of roadside erosion control, revegetation of 6,585 acres of critical sediment-producing area. There has already been completed 2.4 miles of stream channel improvement, 2.3 miles of roadside erosion control, and revegetation of 190 acres of sediment-producing area. Inability of district supervisors to secure all easements has prevented the awarding of one contract. Land treatment measures applied include 1 mile of diversion, 190 acres of cover crops, 70 acres of pasture seeding and 127 acres of pasture improvement.

Upper Green River, Kentucky. The major flood prevention measures for this watershed are 5 floodwater-retarding structures, 12 miles of stream channel improvement, 3 miles of roadside erosion control, and revegetation of 1,312 acres of critical sediment-producing area. Of these measures, there have been accomplished 4.5 miles of stream channel stabilization and 103 acres of revegetation of sediment-producing area. Construction of structures, installation of land stabilization measures primarily for flood prevention, and establishment of land treatment measures which contribute to flood prevention, are on schedule.

Chippewa River Tributaries, Minnesota. The major flood prevention measures planned for this watershed are 5 floodwater-retarding structures, 14 stabilizing and sediment control structures, 25 miles of waterway improvement, and 85.2 miles of floodways. Because of its size and complexity, this project is still in the planning stage. Therefore, structural or other measures primarily for flood prevention have not yet been installed. The land treatment program of establishing practices which contribute to flood prevention is proceeding satisfactorily. Land-use adjustments have been made on 1,020 acres and 388 acres have been strip cropped.

East Willow Creek, Minnesota. The major flood prevention measures planned for this watershed are 12 floodwater-retarding structures, 41 stabilizing and sediment control structures, 25 miles of waterway improvement, 3 miles of stream channel capacity improvement, and 5 miles of roadside erosion control. Five stabilizing and 3 floodwater-retarding structures are in the process of construction. Establishment of land treatment measures which contribute to flood prevention is proceeding satisfactorily.

East Branch of South Fork of Blackwater Creek, Missouri. The major flood prevention measures planned for this watershed are 34 stabilizing and sediment control structures, 4.6 miles of waterway improvement and 7.7 miles of diversion ditches and dikes. Measures already installed include 5 grade stabilization and sediment control structures and 3,250 feet of waterway improvement. Drought conditions for the past three years have hindered the establishment of vegetative practices. However, the following land treatment measures which contribute to flood prevention have been applied: 6.6 miles of terraces, 6.9 miles of field diversions, 41.6 acres of terrace outlet and waterway construction, and 128 acres of pasture seeding.

Lost Creek, Missouri. The major flood prevention measures planned for this watershed are 4 floodwater-retarding structures, 21 stabilizing and sediment control structures, and 6.7 miles of waterway improvement. As of December 1 there had been installed 1 detention structure and 1 grade stabilization structure. Drought conditions during the past three years have resulted in serious failures and delays in the establishment of all types of vegetative practices. However, the following land treatment measures contributing to flood prevention have been applied: 388

acres of land-use adjustments, 2.5 miles of terraces, 6.1 acres of terrace outlets and waterway construction, and 200 acres of pasture seeding.

Muster Creek, Montana. The following resolution was presented and approved at a joint meeting of the North Custer Soil Conservation District Supervisors and the Directors of the Kinsey Irrigation Company held on April 23, 1954: Resolved:

> "That activities of the Muster Creek Watershed Program be held in abeyance for a period of one year from this date in order to give the local interests additional time to work out a more satisfactory cost sharing arrangement and also because of the possibility of the passage of more favorable legislation by Congress for the development of watersheds in the Western States within the next year."

The Service concurred in the delay to April 1, 1955.

Brownell Creek, Nebraska. The major flood prevention measures planned in this watershed are 4 floodwater-retarding structures and 67 stabilizing and sediment control structures. Measures completed to date include 1 floodwater-retarding structure and 3 grade-stabilizing structures. Although the installation of land treatment measures which contribute to flood prevention is progressing satisfactorily, the lack of such measures in some subwatersheds has forced a delay in immediate plans for installation of some structures. Land treatment measures installed to date include 4,494 acres of contour farming, 3.4 miles of diversion construction, 605 acres of pasture seeding, 380 miles of terracing, and 223 acres of waterway development.

Dry Creek, Nebraska. The major flood prevention measures planned for this watershed are 7 floodwater-retarding structures, 19 stabilizing and sediment control structures, and 1.25 miles of floodways. One grade-stabilization structure is under construction. Land treatment measures which contribute to flood prevention that have been applied include 1,326 acres of contour farming, 1,187 acres of crop residue management and 69 miles of terracing.

Indian Creek, Nebraska. The major flood prevention measures planned for this watershed are 18 floodwater-retarding structures and 111 stabilizing and sediment control structures. Measures already installed include 2 floodwater-retarding structures and 5 grade-stabilizing structures. Three tenths of a mile of waterway improvement is under construction. Land treatment measures which contribute to flood prevention are being installed at a generally satisfactory rate in the watershed as a whole. However, in some areas installation of structures is being retarded by lack of land treatment accomplishments.

Upper Salt-Swedeburg Tributaries of Salt Creek, Nebraska. The major flood prevention measures planned for this watershed are 34 floodwater-retarding structures, 185 stabilizing and sediment control structures, 1.6 miles of waterway improvement and 0.6 miles of stream channel improvement. Five floodwater-retarding structures, 9 grade-stabilizing structures and 1.6 miles of waterway improvement have been completed. Progress has been retarded in some areas because establishment of land treatment measures which contribute to flood prevention has been slow. Measures established as of December 1, 1954 include 7,976 acres of contour farming, 342 acres of pasture seeding, 312 miles of terracing, 520 acres of waterway development, and 7,320 acres of conservation crop rotation.

Baboosic Brook, New Hampshire. There are no structural control measures included in the Baboosic Brook watershed work plan. Application of land treatment measures which contribute to flood prevention is progressing satisfactorily. Conservation plans have been completed for 31 farms. In addition conservation plans have been started with another 84 owners. Private contributions for establishment of measures has exceeded planned figures.

Sandia Mountain Tributaries, New Mexico. Negotiations are still under way between the Santa Fe-Sandoval soil conservation district and other local interests regarding the raising of cost-sharing funds. Commitments of over $13,000 have been obtained in addition to the value of rights-of-way for the 2 floodwater-retarding structures planned. These constitute all of the structures planned on non-Federal lands in the project. Grass land management on the area is steadily improving.

Upper Hondo, New Mexico. The major flood prevention measures planned for this watershed are 1 floodwater-retarding structure, 200 stabilizing and sediment control structures, 32 debris basins, 16.9 miles of stream channel improvement and 1.3 miles of roadside erosion control. Forty-one stabilizing and sediment control structures have been completed. Good progress is being made in accelerating the application of land treatment measures which contribute to flood prevention.

Pequest Creek, New Jersey. The major flood prevention measures planned for this watershed are 3 floodwater-retarding structures, 17.5 miles of stream channel improvement, and 4 miles of diversion ditches. Inability to obtain all essential easements continues to hold up starting any of this work. Establishment of land treatment measures which contribute to flood prevention is progressing satisfactorily.

Ball Creek, New York. One floodwater-retarding structure is all that is planned for this project and it will be contracted for in the fiscal year 1955. Planned stream channel improvement work will be done during the 1956 fiscal year. Establishment of land treatment measures which contribute to flood prevention is slightly behind schedule.

Dean Creek, New York. The 2 floodwater-retarding structures and 2.9 miles of stream channel improvement planned are under contract. One structure is 75% complete. Of the 11 debris dams that are to be constructed by local interests, 8 are complete and 3 are under construction. All these flood prevention measures should be completed during the fiscal year 1955. Farm planning in the watershed is on schedule and should be completed during the 1956 fiscal year. Though application of land treatment measures which contribute to flood prevention is lagging temporarily, it is expected to be on schedule soon.

Great Brook, New York. A contract for the construction of the 1 floodwater retarding structure planned for this project will be let in the fiscal year 1955. Farm planning is ahead of schedule, and land treatment measures which contribute to flood prevention are practically on schedule. The low income of many land owners in the watershed has been a factor that has caused some delay in establishment of land treatment measures.

Little Hoosick, New York. The major flood prevention measures planned for this watershed are 13.8 miles of channel capacity improvement and 6 debris basins. These measures are now in the planning stage. Some stream channel work will be contracted for in the fiscal year 1955. Though farm planning is approximately on schedule, application of some land treatment measures which contribute to the flood prevention has lagged temporarily.

Third Creek, North Carolina. The major flood prevention measures planned for this watershed are 11 floodwater-retarding structures, 6 miles of waterway improvement, 43 miles of channel capacity improvement, 4 miles of diversion ditches and dikes, 111 miles of roadside erosion control and revegetation of 1,079 acres of critical sediment producing area. One floodwater-retarding structure has been completed. The chief problem encountered to date has been the prolonged drought which has hindered the application of land treatment measures which contribute to flood prevention. However, 47 acres of trees and 54 acres of grasses and legumes have been planted on critical sediment-producing areas.

Tongue River, North Dakota. The major flood prevention measures planned for this watershed are 18 floodwater-retarding structures, 5 miles of waterway improvement, 30 miles of stream channel capacity improvement and 31 1/2 miles of floodway. None of these measures have been installed nor are any under construction. However, 8.8 miles of channel improvement is to be contracted shortly. Progress in the project has been retarded by necessity for extensive investigations to determine the adequacy of foundation and fill soils for structures planned. Establishment of land treatment measures which contribute to flood prevention has progressed satisfactorily. The watershed activity has increased noticeably the number of district cooperators which in turn will accelerate the application of land treatment measures.

Double Creek, Oklahoma. The major flood prevention measures planned for this watershed are 6 floodwater-retarding structures. Two structures with a total flood storage of 1,343 acre feet have already been constructed. Bids have been solicited for construction of structures with a total storage capacity of 1,824 acre feet. There is a very diversified program on this project of land treatment measures which contribute to flood prevention. It includes cover crops, terraces, diversion terraces, waterway development, pasture and range improvement, and farm ponds for range management. More than 50% of some of these planned practices have already been established.

Rocky Fork - Clear Creek, Ohio. The major flood prevention measures planned for this watershed are 19 stabilizing and sediment control structures, 27 miles of waterway improvement, 2.7 miles of diversion ditches and dikes, 3 miles of stream channel improvement, 2 1/2 miles of roadside erosion control, and revegetation of 70 acres of critical sediment-producing area. Measures completed are 1.2 miles of subwatershed waterways, 0.9 miles of diversion ditches and 1.5 acres of critical area stabilization. Establishment of land treatment measures is approximately 10% complete and progressing concurrently with installation of measures primarily for flood prevention.

Upper Hocking, Ohio. The major flood prevention measures planned for this watershed are 9 floodwater-retarding structures, 72 stabilizing and sediment control structures, 24.2 miles of waterway improvement, and 5.3 miles of stream channel improvement. Two floodwater-retarding structures, 1 stabilizing structure, and 0.2 of a mile of waterway improvement has been completed. Land treatment measures which contribute to flood prevention are 30% completed and progressing on schedule. Progress on the project is on schedule to date, however, the conservancy district which was to raise funds for the fiscal year 1955 is unable to do so until 1956, due to legal phases of its organization. This threatens the timetable of the project.

Cory Creek, Pennsylvania. There are no structural flood prevention measures planned for this watershed to date. As to land treatment measures which contribute to flood prevention, a total of 23 acres of revegetation and 19 acres of strip cropping has been completed and 16.8 miles of field diversions and 4.6 miles of waterways have been constructed.

Twelve Mile Creek, South Carolina. The major flood prevention measures planned for this watershed are 11 floodwater-retarding structures, 27 miles of stream channel improvement, revegetation of 4,170 acres of critical sediment-producing area, 100 miles of roadside control, and 5 miles of diversion ditches and dikes. The measures installed or which are under contract are 1 floodwater-retarding structure, 5 miles of stream channel clearance, and 72 acres of erosion control plantings. Land treatment measures which contribute to flood prevention have so far been established as planned. However, the recent drought, which was the

most severe in many years, has reduced farmer interest considerably and has also drastically decreased the amount of money farmers will be able to spend for applying conservation practices.

Wolf River Tributaries - Mary's and Sand Creeks, Tennessee. The major flood prevention measures planned for this watershed are 2 floodwater-retarding structures, 5 miles of channel capacity improvement, 10 miles of roadside erosion control, 25 stabilizing and sediment control structures, and revegetation of 121 acres of critical sediment-producing area. One floodwater-retarding structure and 47 desilting basins have been completed. Trees have been planted on 202 acres of critical areas and 82 acres of such land have been seeded to legumes. Of the total estimated vegetative measures which contribute to flood prevention needed in the project about 13 percent has been installed. The principal factor presently retarding development of the project is reduced farmer income resulting from three years of drought.

Calaveras Creek, Texas. The major flood prevention measures planned for this watershed are 10 floodwater-retarding structures. Three of these structures have been completed and one is under construction. Progress on establishment of land treatment measures which contribute to flood prevention was slower than anticipated during the fiscal year 1954 due to drought. An active watershed group is now working in furthering planning and application of land treatment at an accelerated rate and good progress is being made.

Cow Bayou Creek, Texas. The major flood prevention measures planned for this watershed are 11 floodwater-retarding structures and 2.6 miles of stream channel improvement. Construction is now being completed on 1 floodwater-retarding structure and the awarding of a contract on another is in progress. Application of land treatment measures which contribute to flood prevention is behind schedule due to drought, but much better progress is now being made. The sponsoring groups are optimistic about accelerating establishment of these measures during this next year.

Escondido Creek, Texas. The major flood prevention measures planned for this watershed are 11 floodwater-retarding structures. Two of these structures have been completed, one is under construction, and another scheduled for completion in the fiscal year 1955. There are still easements to be cleared on several sites, but the local people feel that this can be accomplished and will not slow up scheduled construction. Establishment of land treatment measures that contribute to flood prevention was less than anticipated during the fiscal year 1954 due to drought.

Green Creek, Texas. The major flood prevention measures planned for this watershed are 13 floodwater-retarding structures. One structure

has been completed, one is under construction, and bids have been solicited for construction of another. Easements have been cleared on all structure sites in the watershed and the local leaders are now actively engaged in expediting the establishment of land treatment measures which contribute to flood prevention. Progress on installation of such measures has been slower than originally scheduled due to drought.

Pleasant Creek, Utah. The major flood prevention measures planned for this watershed are 15 stabilizing and sediment control structures, 6.5 miles of channel improvement, 11.6 miles of roadside erosion control, and stabilization of 100 acres of critical runoff and sediment-producing area. Good progress has been made in the installation of both those measures that are primarily for flood prevention and the land treatment measures which contribute to flood prevention. Measures installed include 2,300 lineal feet of ditch relocation, 1 flood spreading structure containing 12,585 cu. yds. of earth and rock fill, 3 debris basins, and 9 erosion control structures. Proper land use has been planned for 3,689 acres.

Santaquin, Utah. The major flood prevention measures planned for this watershed are 1 desilting and debris basin, 1.2 miles of stream channel improvement and 1 mile of floodway. The debris basin structure which contains 107,921 cu. yds. of fill material, is 90% completed. No land treatment measures which contribute to flood prevention have been installed to date, but preliminary work leading to signing of agreements with landowners in the watershed has been completed.

East Fork of Falling River, Virginia. The major flood prevention measures planned for this watershed are 3 floodwater-retarding structures, 15 miles of stream channel improvement, 4.4 miles of waterway improvement, 41 miles of roadbank stabilization, and stabilization of 522 acres of critical runoff and sediment-producing area. Measures installed include 0.5 miles of waterway improvement, 12 miles of roadbank stabilization, and stabilization of 61 acres of critical sediment-producing area. A total of 1.2 miles of critical area is also being fenced. Progress in establishment of land treatment measures which contribute to flood prevention is behind schedule at this time. The normal application rate of vegetative practices was reduced due to extreme drought conditions in the fall of 1954.

Mission Creek, Washington. The major flood prevention measure planned for this watershed is 6 miles of stream channel improvement. A total of 1,540 cu. yds. of rock riprap has been placed for streambank stabilization and 4,826 cu. yds. of material has been moved for channel capacity improvement. Application of land treatment measures which contribute to flood prevention is progressing satisfactorily. Development of the project as planned is being delayed because local sponsors have not yet completed the organization of a legal state subdivision organization capable of securing the necessary local share of project costs.

Salem Fork, West Virginia. The major flood prevention measures planned for this watershed are 8 floodwater-retarding structures and 2 miles of stream channel improvement. Two floodwater-retarding structures have been completed. A city water supply structure, having floodwater-retarding features, is under construction in the project wholly without use of Federal funds. Land treatment measures which contribute to flood prevention are being applied at the scheduled rate. No major problems are hindering the project development at the present time. However, securing of easements and rights-of-way for structures may be a deterrent in the 1955 calendar year.

West Fork of Kickapoo, Wisconsin. The major flood prevention measures planned for this watershed are 2 floodwater-retarding structures, 16 stabilizing and sediment control structures, and 10 miles of waterway improvement. Two floodwater-retarding structures are under construction. Bad weather has caused some construction delay. The contractors' time started July 7 and the job was shut down for the winter on November 12. During this time there were 45 days on which it was not possible to work because of abnormal rainfall and subsequent wet conditions. Application of land treatment measures which contribute to flood prevention has been completed on approximately 60 percent of the cropland and 13 percent of the pasture land.

Installation Activities of the Forest Service:

The Forest Service is responsible for the forestry phases of the Watershed Protection program. For work on State and private lands, the Forest Service in most States works through the State Forestry agency. Also, although the pilot demonstration program was initiated at a time when most State Forestry agencies were not prepared to assume additional financial responsibilities, they have responded wholeheartedly in the initial program participation. For example, some States have assumed almost all of the public share of the tree planting costs, while others are cooperating according to existing patterns of State-Federal cooperation. Certain other States, unable to participate until their legislatures provide additional funds, are nonetheless cooperating to the extent possible, or functioning as the Federal Government's agent until they can assume greater responsibility in the program.

The Forest Service either directly or through the State Forestry agency is concerned with the forestry aspects of works of improvement in 42 of the 60 watersheds. Work plans including these forestry improvements have been prepared on these 42 watersheds and the work is underway on 18.

The following are examples of work the Forest Service is doing in cooperation with State and local interests in these pilot demonstration watersheds in which works of improvement have been installed:

Pequest Watershed, New Jersey. Negotiations necessary to undertake cooperative work on the privately-owned forest lands were completed and field work started in April, 1954. Sixty-one owners of 2,500 acres of forest land were assisted in forest management to improve the hydrologic and economic condition of their properties. Detailed management plans were prepared for 32 individual owners of 2,200 acres. One forest area of 190 acres (203 thousand board feet of merchantable timber) was marked for cutting under sound watershed management principles. Technical guidance was provided to 15 owners in planting trees on 37 acres of cropland to be converted to forest use. Several owners were given technical assistance in stabilizing soil and retarding run-off on old logging roads and skid trails.

Sandia Mountain Tributaries, New Mexico. Field work was started in February, 1954. Critical sediment source areas were fenced to exclude livestock, and most of the land treatment work scheduled for installation in 1954 was completed. This included construction of stabilizing and sediment control structures, slope terracing, planting and seeding of grass species in eroding areas. A limited amount of terracing on steep, eroding slopes was completed.

Sands and Mary's Creeks, Tennessee. About 300,000 trees were planted on 271 acres of critically gullied farm land which was contributing significant amounts of sediment and flood run-off. An additional 110 acres of badly eroding farmland was prepared for planting by the construction of 1300 brush dams designed to temporarily stabilize gully cutting. Cooperative Forest Fire Control was extended to the watershed by the State Forester who had installed two fire lookout towers, two fire crew dormitories, one permanent radio installation, two fire equipment trucks, and fire fighting tools. Local volunteers served as fire crew and foreman.

Pleasant Creek, Utah. Work on the national forest lands of this project was started in September, 1953, but was closed down by snow in mid-October which did not permit resumption of work until mid-June, 1954. In this relatively short time the following work was accomplished on critically eroding mountain land: (1) contour trenching, 70 acres; (2) reseeding, 140 acres; (3) preparation of additional land for seeding, 80 acres; (4) constructed 5 miles of range fence and installed 4 cattle guards to exclude livestock from newly seeded areas; (5) installed erosion control measures on 6 miles of road.

Flood Prevention

Transfers in Estimates, 1956

The Budget Estimate proposes transfers in the 1956 estimates totaling $1,700,000 to this item. The 1954 Agricultural Appropriation Act transferred from the Flood Prevention item to other applicable appropriations amounts to finance the work necessary for the acceleration of the application of conservation or land treatment measures contributing to flood prevention (such as terracing, planting of perennial vegetation including trees, minor gully control measures, etc.,) on the watershed lands of the 11 watersheds on which works of improvement under the Flood Prevention Appropriation are proceeding. Funds for financing measures, the primary purpose and benefit of which is flood prevention, such as the construction of flood water-retarding structures, stabilization and sedimentation control measures, stream channel improvements, diversion ditches, floodways, etc. were retained in the Flood Prevention item. This method of financing was continued in the Department of Agriculture and Farm Credit Administration Appropriation Act, 1955.

The conservation or land treatment measures must be applied to the land concurrently with or prior to construction of the structural measures to protect the latter and provide a satisfactory and balanced program. With the appropriations for the two phases of the total flood prevention improvement program separated, it is difficult to keep the total program in balance throughout the budget process.

The 1956 Budget, therefore, proposes a transfer in the estimates for necessary acceleration of the application of land treatment measures, previously identified in the activity schedules as "additional measures to accelerate flood prevention" to the item "Flood Prevention, Soil Conservation Service."

The amounts transferred in the 1956 estimates from other appropriations are as follows:

Conservation operations, Soil Conservation Service	$1,500,000
Salaries and expenses, Forest Service - National forest protection and management	200,000
Total	$1,700,000

(c) Flood Prevention

Appropriation, 1955	$7,482,000
Activities transferred in 1956 estimates for additional measures to accelerate flood prevention from:	
"Conservation operations, Soil Conservation Service"	1,513,292
"Salaries and expenses, Forest Service"	200,000
Base for 1956	9,195,292
Budget Estimate, 1956	8,700,000
Decrease	-495,292

SUMMARY OF DECREASES, 1956

Decrease due to completion of survey work	- 177,500
Decrease due to rounding off the estimate for works of improvement	- 17,792
Decrease due to completion of the general basin investigations work in the Arkansas-White-Red River and the New England-New York areas	- 300,000

PROJECT STATEMENT

Project	1954	1955 (estimate)	Decreases	1956 (estimate)
1. Preliminary examinations and surveys	$425,538	$177,500	-$177,500(1)	--
2. Works of improvement	7,233,936	8,717,792	-17,792(2)	$8,700,000
3. General basin investigations	168,594	300,000	-300,000(3)	
Total	7,828,068	a/9,195,292	-495,292	8,700,000
1954 Appropriation available in 1955	939,823			
Transfer in 1955 estimates from "Forest roads and trails, Forest Service"	-69,538			
Transfer in 1955 estimates to "Salaries and expenses, Office of the Solicitor, Agriculture"	+18,000			
Transfer in 1956 estimates from:				
"Conservation operations, Soil Conservation Service	-1,443,381	-1,513,292		
"Salaries and expenses, Forest Service"	-272,972	-200,000		
Total appropriation	7,000,000	7,482,000		

a/ In addition, the following unobligated balances from prior year are available:

	1955
a. Preliminary examinations and surveys	$ 138,147
b. Works of improvement	1,879,431
c. General basin investigations	23,098
Total	$2,040,676

DECREASES

The decrease of $495,292 in this appropriation for 1956 is composed of:

(1) A decrease of $177,500 due to planned completion in 1955 of the review surveys being made of six of the eleven watersheds authorized by the Flood Control Act of 1944.

Review surveys are being conducted of the flood prevention works of improvement programs on the Buffalo Creek, Little Sioux, Little Tallahatchie, Middle Colorado, Potomac, and Yazoo River watersheds. It is contemplated that field work will be completed in a few weeks and the review reports completed by June 30, 1955. They will serve as the basis for revising the watershed improvement programs and the total cost estimated for each watershed as set forth in the plans of the original reports for the six watersheds as designated and approved by the Flood Control Act of 1944.

Authority under the Flood Control Acts for this Department to make surveys in areas where works of improvement are not now being carried on under these acts was repealed by the Watershed Protection and Flood Prevention Act, approved August 4, 1954 (Public Law 566, 83rd Congress). Therefore, no appropriation is required for surveys in 1956.

(2) A decrease of $17,792 due to rounding off the estimate for works of improvement.

The 1956 estimate for works of improvement is $8,700,000. This is the same as the appropriation for works of improvement in 1955, except for a decrease of $17,792 due to rounding off the estimate as shown by the following table. This table also reflects, by watershed projects, funds available in 1955 and the distribution of the proposed appropriation for 1956 for works of improvement.

FLOOD PREVENTION

Works of Improvement

Funds Available 1955, and Proposed Appropriation 1956

Watershed	1955								1956 Budget Estimate (New Appropriation - in Addition, Prior Year Balances Available)		
	On Basis of Funds Available							On Basis of Funds Appropriated in 1955			
	Appropriated Under "Flood Prevention"	Balances Carried Forward From 1953	Balances Carried Forward From 1954	Program Adjustments	Total Available Under "Flood Prevention" (Cols. 2, 3, 4, and 5)	Transfers in Estimates for Land Treatment Measures	Total Available (Col. 6 + Col. 7)	Appropriated Under "Flood Prevention"	Transfers in Estimates for Land Treatment Measures	Total Appropriated (Col. 9 + Col. 10)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Buffalo Creek, New York	$285,499	$26,667	$97,052	- -	$409,218	$52,133	$461,351	$285,499	$52,133	$337,632	$325,420
Colorado (Middle), Texas	352,831	17,223	33,335	a/ +$48,505	451,894	44,173	496,067	352,831	44,173	397,004	488,835
Coosa, Ga.	228,725	69,560	4,950	- -	303,235	73.235	376,470	228,725	73,235	301,960	334,169
Little Sioux, Iowa	824,780	119,365	45,500	- -	989,645	56,344	1,045,989	824,780	56,344	881,124	805,811
Little Tallahatchie, Miss.	580,647	173,554	191,177	- -	945,378	148,426	1,093,804	580,647	148,426	729,073	798,021
Los Angeles, California	566,836	166,770	81,076	- -	814,682	150,000	964,682	566,836	150,000	716,836	824,487
Potomac, Md., Pa., Va., W. Va.	189,692	6,981	27,311	- -	223,984	72,490	296,474	189,692	72,490	262,182	243,086
Santa Ynez, California	- -	98,505	25,153	a/ -48,505	75,153	50,000	125,153	- -	50,000	50,000	50,000
Trinity, Texas	1,552,000	114,158	89,509	- -	1,755,667	605,022	2,360,689	1,552,000	605,022	2,157,022	2,060,870
Washita, Oklahoma	1,505,843	1,245	214,961	- -	1,722,049	173,645	1,895,694	1,505,843	173,645	1,679,488	1,493,787
Yazoo, Mississippi	917,647	239,727	35,652	- -	1,193,026	287,824	1,480,850	917,647	287,824	1,205,471	1,275,514
Total	b/ 7,004,500	1,033,755	845,676	- -	b/ 8,883,931	1,713,292	b/10,597,223	b/ 7,004,500	1,713,292	b/ 8,717,792	b/ 8,700,000

a/ Previously planned gully stabilization work and related measures on the lower part of the Santa Ynez watershed will not be feasible in the fiscal year 1955 because local cooperators are not prepared to proceed with the work and provide the necessary cooperation at this time. Therefore, the Department allocated to the Colorado (Middle) River watershed $48,505 of the funds previously allocated to the Santa Ynez. On the Colorado River watershed the local people are ready and anxious to proceed at a greatly accelerated rate.

b/ Includes $300,000 for emergencies. Under authority of Section 216 of the Flood Control Act of 1950, not to exceed $300,000 may be expended each fiscal year for emergency measures when a fire or any other natural element or force has caused a sudden impairment of the watershed. This amount is withheld from the allotments to the various watersheds at the beginning of each year on a proportionate basis. Such amounts as are not needed for emergency measures are redistributed, also on a proportionate basis, to these watersheds toward the end of the fiscal year for use therein.

Flood Prevention funds are available until expended. Works of improvement can progress only as fast as the local people concerned are willing and able to do their part such as providing easements and rights-of-way, and installing land treatment measures. For these and other reasons delays in awarding contracts frequently occur. Hence, as has been the case in years past a considerable carryover into the fiscal year 1956 can also be expected. The following table shows the extent to which carryovers from year to year have occurred in this appropriation in the last five years and the effect of these carryovers on the amount available for obligation in the succeeding years.

Analysis of Carryovers to Succeeding Years of Funds Available for Works of Improvement

Year	Total Amount Available	Amount Obligated	Amount Carried Forward to Subsequent Year
1950	$8,717,960	$5,970,618	$2,747,342
1951	7,218,975	6,662,593	556,382
1952	5,128,339	4,892,021	236,318
1953	7,270,333	6,236,578	1,033,755 a/
1954	6,300,829 a/	5,455,153	845,676

a/ The carryover in 1953 was not available for use in 1954 but, along with the carryover from 1954, is available for use in 1955.

(3) A decrease of $300,000 due to completion in 1955 of the general basin investigations in the Arkansas-White-Red River and the New England-New York areas.

Field work on the Department of Agriculture's phase of the general basin investigations being conducted in the Arkansas-White-Red River and the New England-New York areas is planned to be completed in a few weeks. The Department is participating, with the local, State, and other Federal agencies involved in the investigations, in the preparation and review of the comprehensive basin reports which are scheduled for completion by June 30, 1955. The reports will outline a broad framework for the development of the natural resources of the areas and present an inventory of the potentials for resource development.

CHANGES IN LANGUAGE

The estimates include proposed changes in language for this item as follows (deleted matter enclosed in brackets):

For expenses necessary, in accordance with the Flood Control Act, approved June 22, 1936 (Public Law 738), as amended and supplemented, and in accordance with the provisions of laws relating to the activities of
1 the Department, [to make preliminary examinations and
2 surveys, and] to perform works of improvement, [and to plan the agricultural phases of the development of the Arkansas-White-Red River area, the New England-New York area,] including not to exceed $100,000 for employment pursuant to the second sentence of section 706 (a) of the Organic Act of 1944 (5 U.S.C. 574), as amended by section 15 of the Act of August 2, 1946 (5 U.S.C. 55a), at rates for individuals not to exceed $100 per diem, to remain available until expended, **** Provided, That no part of such funds shall be used for the purchase of lands in the Yazoo and Little Tallahatchie watersheds without specific approval of the county board of supervisors of the county in which such lands are situated
3 [, nor shall any part of such funds be used for the purchase or lands in the counties of Adair, Cherokee, and Sequoyah, in the State of Oklahoma, and Neosho, cottonwood, Verdigris, Caney, and tributaries in Kansas, without the specific approval of the Board of County Commissioners of the county in which such lands are
4 situated]: Provided further, That [of] the funds avail-
4 able herein[, not in excess of $6,504,500] (with which shall be merged the unexpended balances of funds heretofore made available for these purposes) may be expended in watersheds heretofore authorized by section 13 of the Flood Control Act of December 22, 1944, for necessary gully control, floodwater detention, and floodway structures in areas other than those over which the Department of the Army has jurisdiction and responsibility.

The first change in language proposes deletion of the words "to make preliminary examinations and surveys, and". Public Law 566, approved August 4, 1954, repealed the authority of the Department to make preliminary examinations and surveys under the Flood Control Act. It is contemplated that review surveys on the 6 watersheds under way in 1955, which are considered necessary for completion of works of improvement on these watersheds, will be completed by June 30, 1955. However, any uncompleted work on these surveys after that date will be financed from any unobligated balance of survey funds carried forward to the fiscal year 1956.

The second proposed change deletes the words "and to plan the agricultural phases of the development of the Arkansas-White-Red River area, and the New England-New York area," since it is contemplated that the Department's

participation in the development of the agricultural phases of the program for these areas will be completed with the funds made available in the 1955 fiscal year. However, any expenses after June 30, 1955, necessary to complete the work planned will be financed from any unobligated balances of funds for this purpose carried over to the fiscal year 1956.

The third proposed change deletes language prohibiting the use of funds for the purchase of lands in the counties of Adair, Cherokee, and Sequoyah, in the State of Oklahoma, and Neosho, Cottonwood, Verdigris, Caney, and tributaries in Kansas, without the specific approval of the Board of County Commissioners of the county in which such lands are situated. This restriction is no longer necessary since Public Law 566, 83rd Congress, approved August 4, 1954, limits the authority of the Department to perform works of improvement in the present eleven authorized watershed areas, none of which are in any of the areas named.

The fourth change in language deletes the words "of" and ", not in excess of $6,504,500". Since the entire appropriation proposed for 1956 is for works of improvement in the eleven authorized watersheds, retention of these words is no longer necessary.

STATUS OF PROGRAM

PRELIMINARY EXAMINATIONS AND SURVEYS

Recent Progress:

Allocation of Funds for Surveys

Funds available for Preliminary Examinations and Surveys made under the Flood Control Acts have been allocated to the cooperating agencies in the Department as follows:

Agency	1954 Obligations	1955 Estimate	1956 Estimate
Soil Conservation Service.....	$255,526	$245,268	---
Forest Service	140,226	70,379	---
Agricultural Research Service.	29,786	---	---
Total	425,538	315,647	---

Status of Surveys

The authority to conduct preliminary examinations and surveys for flood prevention purposes was repealed by Section 7 of the Watershed Protection and Flood Prevention Act, Public Law 566, 83rd Congress, approved August 4, 1954, which reads as follows:

> "The provisions of the Act of June 22, 1936 (49 Stat. 1570), as amended and supplemented, conferring authority upon the Department of Agriculture under the direction of the Secretary of Agriculture to make preliminary examinations and surveys and to prosecute works of improvement for runoff and waterflow retardation and soil erosion prevention on the watersheds of rivers and other waterways are hereby repealed: Provided, That (a) the authority of that Department of Agriculture, under the direction of the Secretary, to prosecute the works of improvement for runoff and waterflow retardation and soil erosion prevention authorized to be carried out by the Department by the Act of December 22, 1944 (58 Stat. 887), as amended, and (b) the authority of the Secretary of Agriculture to undertake emergency measures for runoff retardation and soil erosion prevention authorized to be carried out by Section 7 of the Act of June 28, 1938 (52 Stat. 1215), as amended by section 216 of the Act of May 17, 1950 (64 Stat. 163), shall not be affected by the provisions of this section."

All survey work conducted by the Department under authority of the Flood Control Act of 1936, as amended and supplemented, has been discontinued except for review surveys on 6 of the 11 watersheds in which the Department is permitted by Section 7 of Public Law 566, 83rd Congress, to continue to prosecute works of improvement for flood prevention.

Review Surveys Reports to be Completed in 1955

The 6 review surveys are scheduled to be completed this fiscal year. The watersheds involved are:

1. Buffalo Creek, New York
2. Colorado (Middle), Texas
3. Little Sioux, Iowa and Minnesota
4. Little Tallahatchie, Miss.
5. Potomac, Pa., W. Va., Md., & Va.
6. Yazoo, Mississippi

These reviews of programs set forth in previously completed reports were authorized by the Congress after experience gained in the installation of improvement measures, changes in physical conditions on watersheds, development of improved techniques, changes in construction costs, and other factors revealed the need for revising the improvement programs and cost estimates.

WORKS OF IMPROVEMENT

Current Activities:

The Flood Control Acts provide for the reduction of floodwater, sediment, and erosion damages and the prevention of floods by watershed improvement measures for which the Department of Agriculture is responsible and for control of floods by main-stream control works for which the Department of the Army is responsible. The work of the Department under this item is carried on in the eleven watersheds authorized by the Flood Control Act of 1944, and consist of (a) the preparation of detailed sub-watershed or functional work plans which specify the kind of improvements to be installed for flood prevention, their location, and the work schedule, (b) the installation of works of improvement, such as diversions, dikes, gully-stabilizing and water-retarding structures, debris and desilting basins, floodways, stream-channel improvements, fire protection and woodland improvement measures, etc., in order to reduce flood, erosion, and sediment damage and retard runoff and control its movement into the main streams, and (c) the acceleration of land treatment measures to prevent erosion and protect the structural works of improvement from flood and sediment damage. Proposed improvements by the Department are correlated with and designed to protect mainstream work by the Corps of Engineers, the Bureau of Reclamation, and others, in addition to providing protection to the watershed lands and property above the mainstream works.

Program Assignments

The Soil Conservation Service has general responsibility for administration of the work of the Department authorized under the Flood Control Acts. The Soil Conservation Service and the Forest Service carry out the planning and installation of flood prevention works of improvement in the authorized watersheds. Division of responsibility is in accordance with their respective specialist fields. The Forest Service activities are concerned with (a) all national forests and other lands in the authorized watershed that are administered by the Forest Service, (b) all range areas adjacent to national forests in the watershed and used in conjunction with such forests, and (c) other forest land within the watersheds. The Soil Conservation Service activities are concerned with other private and public lands in the watersheds.

Maintenance Responsibilities

The proper and continued maintenace of installed measures is the key to the long-time effectiveness of the watershed improvement programs. Land owners and operators generally maintain conservation and other measures which benefit primarily the lands upon which they are installed. Local units of government generally maintain the measures which provide primarily off-site benefits.

Recent Progress:

Allocation of Funds for Works of Improvement

Funds available for planning and installation of flood prevention works of improvement are allocated between the Soil Conservation Service and the Forest Service as follows:

Agency	1954 Obligations	1955 Funds Available	1956 Estimate
Soil Conservation Service	$6,079,623	$9,330,900	$7,692,000
Forest Service	1,154,313	1,266,323	1,008,000
Total	7,233,936	10,597,223	8,700,000

The following table provides a breakdown by watersheds of the allocations for 1955 and 1956 shown above:

Watershed	1955 Funds Available, Agency Distribution			1956 Budget Estimate, Agency Distribution		
	SCS	FS	Total	SCS	FS	Total
1. Buffalo Creek, N. Y.	$461,351	---	$461,351	$325,420	---	$325,420
2. Colorado (Middle), Texas	496,067	---	496,067	488,835	---	488,835
3. Coosa, Ga., Tenn.	376,470	---	376,470	334,169	---	334,169
4. Little Sioux, Iowa, Minn.	1,045,989	---	1,045,989	805,811	---	805,811
5. Little Tallahatchie, Miss.	863,383	$230,421	1,093,804	614,605	$183,416	798,021
6. Los Angeles, California	390,203	574,479	964,682	336,743	487,744	824,487
7. Potomac, Md., Pa., Va. W.Va.	277,905	18,569	296,474	228,542	14,544	243,086
8. Santa Ynez, California	25,153	100,000	125,153	---	50,000	50,000
9. Trinity, Tex.	2,360,689	---	2,360,689	2,060,870	---	2,060,870
10. Washita, Okla.	1,895,694	---	1,895,694	1,493,787	---	1,493,787
11. Yazoo, Miss.	1,137,996	342,854	1,480,850	1,003,218	272,296	1,275,514
12. Emergencies a/	---	---	---	---	---	---
Total	9,330,900	1,266,323	10,597,223	7,692,000	1,008,000	8,700,000

a/ Under authority of Section 216 of the Flood Control Act of 1950, not to exceed $300,000 may be expended each fiscal year for emergency measures when a fire or any other natural element or force has caused a sudden impairment of the watershed. This amount is withheld from the allotments to the various watersheds at the beginning of each year. Such amounts as are not needed for emergency measures are redistributed to these watersheds toward the end of the fiscal year for use therein.

Activities of the Soil Conservation Service:

Watershed Work Plans and Improvement Measures

The Soil Conservation Service has, in cooperation with soil conservation districts, planned and installed watershed improvement measures in all 11 of the authorized watersheds. As of June 30, 1954, work plans had been developed for approximately 13,000,000 acres or about 43 percent of the 30,102,774 acres in the authorized portions of the watersheds.

The following table lists some of the major watershed works of improvement which have been accomplished cooperatively by the Soil Conservation Service and local cooperators in 1954, and those planned to be installed in 1955 and 1956:

Explanation	Unit	1954 Actual	1955 Estimate	1956 Estimate
1. Floodwater retarding structures	Number	71	115	106
2. Stabilizing and sediment control measures:				
(a) Structures	Number	82	60	202
(b) Debris Basins and desilting basins	Number	875	58	27
3. Subwatershed waterway improvement	Acre	61	25	276
4. Stream channel improvement	Mile	67	101	107
5. Diversion ditches and dikes	Mile	71	19	128
6. Floodways (channel excavation)	Mile	54	1	-
	Cu.Yd.	3,406,927	70,000	-
7. Stabilization of critical runoff and sediment producing areas:				
(a) Roadside erosion control	Mile	165	436	234
(b) Revegetation of critical areas				
(1) Grasses and legumes	Acre	9,425	3,850	6,990
(2) Woody plantings	Acre	9,256	2,325	30

Local Cooperation on Flood Prevention Program

The establishment and maintenance of a sound flood prevention program is dependent upon the willingness and ability of the local people to assume their full share of the responsibility for the works of improvement to be installed. This cooperation includes participation in planning, installation of land treatment measures that contribute to flood prevention, securing of easements and rights-of-way, sharing of costs in some cases of works of improvement primarily for flood prevention, and assumption

of full responsibility for maintenance of improvements installed. The following are examples of local cooperation:

1. In the State of Mississippi, the Tallahatchie Soil Conservation District Commissioners and the County Drainage District have provided rights-of-way and local participation to cover 40% of the cost of a $116,000 installation in one subwatershed of the Little Tallahatchie River Watershed. A recent bond issue was in the amount of $75,000.

2. In Wilkin Creek, a tributary to the Little Tallahatchie River, the local people organized into an informal group and have assessed themselves an annual levy to turn over to the local soil conservation district to finance rights-of-way and maintenance costs.

3. In Brady Creek, a tributary of the Middle Colorado River Watershed, the local people have obtained all easements and rights-of-way necessary to the installation of 46 floodwater-retarding structures and over 40 miles of floodways. This required the cooperation of the county as 1.5 miles of roads must be relocated. The estimated total non-Federal contribution is in excess of one-half million dollars.

Effect of Watershed Improvements

The effect of watershed improvement measures on reduction of flood damages was clearly evident during the April, 1954, storms in the Sandstone Creek subwatershed of the Washita River Watershed in Oklahoma. The weighted average rainfall over the watershed was: April 25, 0.73 inches; April 27, 1.05 inches; and April 29, 2.21 inches. The maximum intensity was recorded as 3.2 inches per hour. The extreme intensity of the rainfall, the poor condition of vegetative cover as a result of prolonged drought, and the antecedent rainfall on April 25 and 27 combined to produce excessive runoff from the storm of April 29. It was the opinion of operators of floodplain land above the junction of the East and West Forks of Sandstone Creek that if the floodwater-retarding structures had not existed, the flood peak would have exceeded that of the record-breaking floods of 1934 and 1935. Most of the structures on the West Fork of Sandstone Creek received enough runoff to cause operation of the automatic drawdown. All the structures functioned effectively. The floodwater which was retained was discharged over a period of several days. At peak flow the channel on Sandstone was able to contain all the runoff water except for an area at the mouth of the creek which was affected by backwater from the Washita. This is a section of the creek where a channel improvement or floodway is yet to be constructed.

A district supervisor in the Upper Washita Soil Conservation District commented specifically on the effectiveness of the conservation land treatment as well as of the floodwater-retarding structures. He stated that without the flood prevention work on Sandstone, Beaver Dam and Kiowa Creeks, this particular flood could have been more disastrous than the one of April 1935, when seventeem people lost their lives. No lives were lost in this storm and agricultural damage on the three treated watersheds was practically negligible.

Activities of the Forest Service:

Measures to Improve and Protect Watersheds

The Forest Service has participated with local interests on 5 of the 11 authorized flood prevention watersheds. Deteriorated forest and mountain wildlands contribute to floodwater and sediment damages on these watersheds. During the fiscal year 1954 flood prevention works of improvement were restricted to the following items: (1) mountain channel stabilization; (2) road erosion control; (3) revegetation of critical sediment source areas; and (4) technical assistance to private owners to improve the hydrologic condition of forests and woodlands.

The following table lists the principal flood prevention works of improvement for which the Forest Service was responsible on the watersheds of the Los Angeles, Little Tallahatchie and Yazoo Rivers:

Explanation	Unit	1954 Actual	1955 Estimate	1956 Estimate
Road erosion control, public lands	Mile	6.5	25	40
Fire protection:				
Fire control roads	Mile	3	15	10
Water developments	Number	10	6	5
Heliports	Number	42	20	20
Crew barracks	Number	1	1	1
Mobile fire equipment	Number	6	7	5
Revegetation of critical source areas:				
Seeding & planting(trees & shrubs)	Acre	13,646	23,000	30,000
Soil stabilizing brush dams	Number	53,263	50,000	70,000
Mulching	Acre	7,209	8,000	9,000
Mountain channel stabilization:				
Barriers	Number	--	12	20
Bank stabilization-planting	Sq.Yd.	--	1,000	2,000
Channel clearing	Acre	15	30	30

Woodland Plantings

During the past year in the Yazoo and Little Tallahatchie River watersheds, more than 30 million trees were planted on more than 19,000 acres of critically eroding farm lands in Northern Mississippi with assistance from this and other programs of the Department of Agriculture. Some 7,200 acres, too actively eroding to permit direct planting, were temporarily stabilized by mulching and small brush dams prior to planting. In addition to the effective soil stabilization being accomplished by these plantations, local economy will also be improved. Projecting growth about 15 years in these plantations, an estimated volume of 942,000 cords of pulpwood will be available for harvest at an estimated stumpage value of $3,768,000.

Fire Protection

Intensification of fire protection on steep national forest lands was a major accomplishment on the watersheds of the Los Angeles and Santa Ynez Rivers. Protection of these steep, brush-covered lands directly above highly developed residential and agriculture lands, and above numerous Federal and local flood and debris control structures, continued to be a dominant factor in adequate flood protection in the southern California area. Protection on these two watersheds was intensified during the past year by the purchase and installation of 12 mobile and stationary short-wave radios to facilitate communication and detection. About five pieces of mobile fire control equipment, including tankers, tractors, and trucks, were purchased. Several helicopter landing spots were constructed and 3 miles of fire roads were rebuilt. Special fire crews were trained and used during a 6-month period for initial attack on all fires in these watersheds. During their period of employment, all fires starting in these two areas were suppressed and controlled at the minimum burned area without creating serious flood and debris threat to downstream values. One major fire occurred in the Los Angeles watershed after these specially trained fire crews were released. This fire resulted in extensive flood and debris damage to downstream residential areas and flood and debris control structures located in the foothill canyons.

Watershed Improvements

On the Los Angeles River watershed, additional works of improvement included (1) the stabilization of cut and filled slopes on some 20 miles of mountain roads which contribute significantly to the flood-water and debris problems; (2) clearing boulders and riparian vegetation clogging some 15 acres of mountain stream bed; (3) development of detail project plans in cooperation with the Los Angeles County Flood Control District for the stabilization of Haines Canyon, a critical mountain flood source area.

Emergency Measures

Under authority of Section 216 of the Flood Control Act of 1950 emergency treatment of some 48,000 acres denuded by fire on 6 watersheds, one of which was the Los Angeles, was accomplished during the past year. Each of the areas treated was located in steep, mountainous country where potential flood and debris damage was a serious threat to adjacent downstream industrial, residential, and agricultural developments. The most critical of the areas treated were the Monrovia Peak and Barrett Canyon burned areas in southern California where late winter storms hit before the emergency treatment measures were fully installed. Emergency seeding had just been completed when high intensity rainfall brought extensive debris and sediment damage to residential areas at the foot of the mountain. Construction of two debris retention structures was immediately rushed to completion to minimize further damage.

GENERAL BASIN INVESTIGATIONS

Current Activities:

The Department is participating with six other Federal departments and agencies and with the respective States concerned, in planning comprehensive, integrated resource development programs for the Arkansas-White-Red River and New England-New York areas. Field work is planned to be completed early in this calendar year. Reports outlining plans for the development, use and conservation of all natural resources in those areas are in process of preparation and are scheduled for completion by the end of the current fiscal year. In the event the Department is unable to complete its part of these reports as scheduled, funds for this work remaining unobligated as of June 30, 1955, would be used to finish and print the reports in the 1956 fiscal year.

Agency Participation

Funds provided specifically for General Basin Investigations in the Department are allocated as follows:

Agency	1954 Obligations	1955 Estimate	1956 Estimate
Soil Conservation Service	$114,599	$268,072	--
Forest Service	20,745	24,321	--
Agricultural Research Service	31,766	30,705	--
Farmers Home Administration	1,484	--	--
Total	$168,594	323,098	

(d) Water Conservation and Utilization Projects

Appropriation Act, 1955, and base for 1956	$480,000
Budget Estimate, 1956	- -
Decrease (due to financing entire project needs with carryover funds and consequent elimination of an appropriation in 1956	-480,000

NOTE: Although a decrease of $480,000 in appropriation is shown for this item for 1956, there will be prior year balances of $417,830 available in the fiscal year 1956.

PROJECT STATEMENT
(on an available funds basis)

Project	1954	1955 (estimated)	Increase or Decrease	1956 (estimated)
1. Land development	381,555	365,190	+10,177	375,367
2. Land management, settlement, and technical guidance	34,894	21,935	+ 20,528	42,463
Total obligations	416,449	387,125a/	+ 30,705	417,830a/
Unobligated balance brought forward	- 56,404	-324,955	- 92,875	-417,830
Unobligated balance carried forward	+324,955	+417,830	-417,830	- -
Total appropriation or estimate	685,000	480,000	-480,000 (1)	- -

DECREASE

(1) A decrease of $480,000 due to anticipated availability of prior year balances for financing needed work in 1956.

The budget estimate does not propose an appropriation for 1956, since, because of necessary rescheduling of work as explained below, the $480,000 appropriated for 1955 plus the prior year balances available for obligation will provide sufficient funds to carry on planned project operations in both 1955 and 1956. All land development work on the Angostura, South Dakota project was completed in the fall of 1954. However, due to failure of the siphon construction by the Bureau of Reclamation to bring water to a portion of the project area, irrigation water for the remaining developed farm units will not be available

a/ Subsequent to printing of the 1956 Budget it was learned that correction of water distribution problems on the Angostura, South Dakota project has made it necessary to reschedule the work on this project and postpone the anticipated sale of farms until the fiscal year 1956. The printed Budget, which indicates obligations of $485,911 for 1955 and $319,044 for 1956, does not therefore reflect the rate of progress presently expected under this appropriation. Because the changes are considered significant, the project statement has been prepared to reflect this later information and the current scheduling of the work.

until repairs are completed in the summer of 1955. The farm units involved have been seeded to a cover crop of rye to reduce the hazards of wind erosion, and in the spring will be leased to operators for the 1955 crop season. Advertising and sale of these units is expected to be made in the fall of 1955 after the crops have been harvested.

Resumption of full-scale development work on the Eden Valley, Wyoming project was delayed until the summer of 1954 pending approval of a change in project development plans (which required special enabling legislation) and the relocation and construction of the main distribution canal by the Bureau of Reclamation. This delay has resulted in setting back the project completion schedule by one year.

Funds presently available will provide for necessary management, maintenance and sales expense on the Angostura project until the final farm units are sold. They will also provide for project land development work at a rate commensurate with the most efficient use of available manpower and equipment on the Eden Valley project.

CHANGE IN LANGUAGE

The following language (enclosed in brackets) is proposed for deletion:

> [For expenses necessary to carry out the functions of the Department under the Acts of May 10, 1939 (53 Stat. 685, 719), October 14, 1940 (16 U.S.C. 590y-z-10), as amended and supplemented, June 28, 1949 (Public Law 132), and September 6, 1950 (7 U.S.C. 1033-1039), relating to water conservation and utilization projects, to remain available until expended, $480,000, which sum shall be merged with the unexpended balances of funds heretofore appropriated to said Department for the purposes of said Acts.]

The entire language for this item is proposed for deletion since no appropriation request has been made for the fiscal year 1956.

STATUS OF PROGRAM

Current Activities:

The Water Conservation and Utilization (Wheeler-Case) program is carried on cooperatively with the Bureau of Reclamation which has as its responsibility the construction of both the primary water supply features such as dams, reservoirs and principal canals, and the necessary drainage facilities. The Soil Conservation Service is responsible for developing irrigated and irrigable project lands for efficient application and use of irrigation water; for providing permanent settlement opportunities for farm families and veterans; and for furnishing technical assistance to the farmers in the project on proper land use and soil and water conservation farming.

Land Development

To change dry farm and range land into efficient irrigation farming units requires extensive land preparation. The irrigation system must also be well designed and constructed to prevent waste of soil and water resources and permit maximum use of available irrigation water. The work of developing the irrigable project lands includes such activities as making detailed land classification and topographic surveys, clearing and leveling land, subdividing land into economic-sized units, and the construction of farm ditches, laterals, drains, and other water control structures.

Land Management, Settlement, and Technical Guidance

As project lands are developed they are sold to qualified farm settlers selected by a local advisory board. The selling price of the completed farm unit is based on the earning power of the land and is calculated to return to the Federal Treasury an amount not less than the reimbursable cost of development with interest at 3 percent over a 40-year amortization period. Technical guidance, to insure efficient irrigation and conservation farming methods, is furnished to operators of both the Government-owned and the privately-owned lands within the project area. The Government-owned lands and faciltities after development into units are often leased under specific use conditions until they are ready for sale.

Recent Progress:

Status of Project Development

Nineteen Water Conservation and Utilization projects were originally authorized for development under the 1940 Department of the Interior Appropriation Act and the "Wheeler-Case" Act of October 14, 1940, as amended. Eleven projects have been completed. The Angostura, South Dakota, project is scheduled for completion in 1956, and the Eden Valley, Wyoming, project is planned for completion in 1958. Development of the remaining six authorized projects is no longer planned due to inflationary land prices and other changes which have occurred since they were authorized.

Angostura Project, South Dakota

All land-levelling and sub-division work on the Angostura, South Dakota project was completed early this fiscal year. However, due to failure of the siphon constructed by the Bureau of Reclamation to bring water to a portion of the project area, irrigation water will not be available for the last of the developed farms until repairs are made. A contract has been awarded by the Bureau of Reclamation for this repair work, which calls for completion in May 1955. Following completion of the repairs it will take until early fall of 1955 for that agency to complete the process of priming and puddling the canal and main laterals of the water delivery system. Accordingly, there is little likelihood of water being available for this segment of the project for the 1955 crop year. The approximately 1200 acres of irrigable land involved (comprising eleven farming units) has been seeded to a cover crop of rye to reduce the hazards of wind erosion. Advertising and sale of these units is now planned for completion in the fall of 1955. Twenty-eight developed farm units on this project were sold in the 1954 fiscal year.

Buffalo Rapids I and II Projects, Montana

The remaining development work and sale of all farm units on the Buffalo Rapids I and Buffalo Rapids II projects in Montana was completed in the fiscal year 1954. The drainage construction by the Bureau of Reclamation on Buffalo Rapids I which had delayed the sale of some farm units has been nearly completed. Effective July 1, 1954, technical help is being provided to project settlers through the regular program of assistance to soil conservation districts.

Eden Valley Project, Wyoming

The plan for development of the Eden Valley, Wyoming, project was revised during the fiscal year 1954. The Bureau of Reclamation and the Soil Conservation Service agreed to the inclusion of some public domain lands in the project plan of development in lieu of some project lands under the jurisdiction of the Department of Agriculture which were of lower quality. Public Law 377, 83rd Congress, approved May 28, 1954, authorized the transfer of lands between the Department

of the Interior and the Department of Agriculture for this purpose and also authorized exchange of land between the Department of Agriculture and the State of Wyoming. When these exchanges have been accomplished, it will permit the available water supply for the Eden Valley project to be applied to the lands most suited to irrigation development and facilitate construction of the most economical system of irrigation water distribution. Large scale land development was begun on Government-owned land on this project during the latter part of the fiscal year 1954. It is anticipated that the land development program and sale of farm units will be completed and the project closed by the end of the fiscal year 1958.

Obligations by Projects

The following table shows, by project, the actual obligations incurred under this program in 1954 and estimated obligations for the fiscal years 1955 and 1956:

Project	Actual F.Y.1954	Estimated F.Y. 1955	Estimated F.Y. 1956	Balance Needed to Complete
Angostura, South Dakota	$261,628	$77,865	$26,625	--
Buffalo Rapids I, Mont.	3,123	--	--	--
Buffalo Rapids II, Mont.	25,054	--	--	--
Buford-Trenton, N. Dak.	9	--	--	--
Eden Valley, Wyoming	80,580	277,423	359,205	$348,105
Recovery of prior year obligations	-1	--	--	--
Total Direct Project Costs	370,393	355,288	385,830	348,105
General Administration	46,056	31,837	32,000	30,895
Total Estimate	416,449	387,125	417,830	379,000

Development Accomplishments and Work Load

The following table shows some of the more important items of development work planned, the amount completed to date, and the amount remaining to be done:

Item	Unit	Total Development Planned	Accomplished to 6/30/54	Remaining to be done 7/1/54
Topographic surveys	Acre	163,541	161,478	2,063
Land classification	Acre	194,089	194,089	--
Unit subdivisions	No.	546	546	--
Clearing	Acre	30,814	24,338	6,476
Leveling	Acre	70,771	59,690	11,081
Farm laterals	Mile	1,480	802	678
Farm drains	Mile	596	412	184
Farm irrigation structures	No.	9,092	7,577	1,515

Status of Land Development and Farm Sales
as of June 30, 1954

Project	Date Authorized	Irrigable Acreage	Percent Development Completed	Federally-owned tracts c/	
				Total Number	Number Sold
Angostura	March 6, 1941	12,154	89	105	57
Bitterroot	March 22, 1944	18,630	8 b/	-	--
Buffalo Rapids I	May 15, 1940	14,507	100	95	95
Buffalo Rapids II	May 15, 1940	10,400	100	110	110
Buford-Trenton	Sept. 23, 1939	14,729	100	134	134
Dodson a/	March 17, 1944	1,200	100	-	-
Eden Valley	Sept. 18, 1940	20,000	-	61	-
Intake a/	Jan. 20, 1944	825	99 b/	-	-
Mancos	Oct. 24, 1940	10,000	54 b/	2	2
Mirage Flats	March 30, 1940	12,000	100	111	111
Missoula a/	May 10, 1944	900	100	-	-
Newton a/	Oct. 17, 1940	2,225	100	-	-
Post Falls	Jan. 29, 1944	3,260	90 b/	17	17
Rapid Valley	Nov. 8, 1939	12,000	- b/	-	-
Scofield a/	May 24, 1943	12,500	30 b/	-	-

a/ Projects include no Federally-owned land.
b/ Projects closed, no further development work contemplated.
c/ In addition there are privately-owned lands within a number of projects on which development work is done.

Project Authorizations and Obligations through 6/30/54

Project	Present Project Authorization	Obligations through June 30, 1954			
		"Wheeler-Case" Funds	"Great Plains" Funds	Contributed Funds	Total
Angostura	$1,484,000	$1,320,990	--	--	$1,320,990
Balmorhea	569,000	--	--	--	--
Bismarck	None	--	--	--	--
Bitterroot	752,000	167,811	--	--	167,811
Buffalo Rapids I	743,770	99,318	$210,000	$424,175	733,493
Buffalo Rapids II	810,122	319,682	345,000	139,608	804,290
Buford-Trenton	1,094,000	62,798	762,958	264,838	1,090,594
Dodson	84,000	51,484	--	--	51,484
Eden Valley	1,529,000	384,611	154,595	5,061	544,267
Intake	41,000	20,817	--	--	20,817
Mancos	473,000	366,879	--	--	366,879
Mann Creek	None	--	--	--	--
Mirage Flats	687,300	479,152	170,000	36,837	685,989
Missoula	133,000	65,297	--	--	65,297
Newton	75,500	74,230	--	--	74,230
Post Falls	196,000	a/196,572	--	--	a/ 196,572
Rapid Valley	170,000	7,117	15,042	--	22,159
Saco Divide	480,000	--	405	--	405
Scofield	350,000	119,531	--	12,200	131,731
Total direct project costs	9,671,692	3,736,289	1,658,000	882,719	6,277,008
Project investigations and surveys	--	233,473	--	--	233,473
General Administration:					
Farm Security Administration	--	349,091	--	--	349,091
Office of Production	--	4,137	--	--	4,137
Office of the Solicitor	--	59,957	--	--	59,957
Soil Conservation Service	--	768,664	--	--	768,664
Total obligations through 6/30/54	xxx	5,151,611	1,658,000	882,719	7,692,330

a/ Net obligations after deduction for residual value of equipment is $186,750.

STATEMENT OF OBLIGATIONS UNDER ALLOTMENTS AND OTHER FUNDS

(Includes only those amounts which, by November 30, 1954, were actually received or programmed for 1955 or 1956. Since work for other agencies is performed on a service basis, at the request of those agencies and for their benefit, it is not practicable to estimate in advance the amounts to be received in most cases.)

Item	Obligations, 1954	Estimated Obligations, 1955	Estimated Obligations, 1956
Allotments from:			
Agricultural Conservation Program, Agriculture - For farm land restoration in flood-stricken areas	$148,442	$12,000	- -
Allocations and Working Funds (Advances from other agencies):			
Atomic Energy Commission - For investigations pertaining to use of isotopes in ion absorption by plants and the reaction in soils	- -	10,000	- -
Department of the Air Force - For mosaic compilations and miscellaneous photographic reproductions	221,063	- -	- -
Department of the Army - For the preparation of soil maps, studies of soil, trafficability, and state of ground and soils	78,091	75,000	- -
Department of the Interior - For development of recommendations for soil conservation practices on lands comprising the Farwell irrigation unit	26,664	- -	- -
Foreign Operations Administration - For: expenses in connection with training and technical assistance activity	17,446	49,150	- -
Total, Allocations and Working Funds	343,264	134,150	- -
Trust Funds:			
Payments in Lieu of Taxes, and Operation and Maintenance Costs, Water Conservation and Utilization Projects - Receipts from land leases for payments in lieu of taxes to States,			

(Continued on next page)

Item	Obligations, 1954	Estimated Obligations, 1955	Estimated Obligations, 1956
political subdivisions thereof, and local taxing units, and for operation and maintenance expenses of the resettlement features of certain water conservation and utilization projects (40 U.S.C. 431-434)	16,428	17,626	$700
Technical Services and Other Assistance, Agricultural Conservation Program Service, Soil Conservation Service, Department of Agriculture - For technical and other assistance to farmers and ranchers in participating counties pursuant to agreements with individual Agricultural Conservation Program State and County Committees	5,082,355	5,678,500	5,682,000
Miscellaneous Contributed Funds, Department of Agriculture (deposited by cooperating agencies, as follows):			
For flood control works of improvement on the Los Angeles River watershed	- -	300,000	243,239
For cooperation with Clatsop and Columbia counties in Oregon for aerial photography work	4,127	1,473	- -
For cooperation with the Weber Basin Water Conservancy District in conducting snow surveys and water supply forecasts in the Weber River Basin	105	- -	- -
For cooperation with the Tallahatchie Drainage District and the Tallahatchie River Conservancy District in connection with works of improvement for run-off and waterflow retardation in the Little Tallahatchie River Watershed	- -	43,647	- -
For cooperation with the Firebaugh Soil Conservancy District, California on erosion control and soil conservation work	324	- -	- -
For cooperation with various contributors in emergency flood restoration programs	64,094	3,393	- -

(Continued on next page)

Item	Obligations, 1955	Estimated Obligations, 1955	Estimated Obligations, 1956
For cooperation with various contributors in a survey of watersheds for run-off and waterflow retardation and soil erosion prevention	986	63,166	122,832
For cooperation with California Department of Public Works, Division of Water Resources on barrier investigations in the San Francisco Bay area relating to irrigation and conservation of water	3,106	- -	- -
For cooperation with Central and Southern Florida Control District on water control in the Everglades area	5,426	- -	- -
Total, Miscellaneous Contributed Funds, Department of Agriculture	78,168	411,679	366,071
Total, Trust Funds	5,176,951	6,107,805	6,048,771
Obligations under Reimbursements from Governmental and Other Sources:			
Conservation Operations:			
Sale of cartographic reproductions, cooperative projects with State agencies, sale of nursery stock, detail of personnel to other Federal agencies, sale of equipment and accessories for which the proceeds are used to purchase similar items, etc.	1,468,206	1,492,412	1,500,000
Watershed Protection	1,281	2,175	9,400
Flood prevention, Agriculture	29,126	15,661	16,400
Water Conservation and Utilization Projects	3,158	3,085	800
Total, reimbursements	1,501,771	1,513,333	1,526,600
TOTAL OBLIGATIONS UNDER ALLOTMENTS AND OTHER FUNDS	7,170,428	7,767,288	7,575,371

PASSENGER MOTOR VEHICLES

Conservation Operations

The estimates for 1956 include the scheduled replacement of 120 passenger motor vehicles during the fiscal year. These vehicles will replace a similar number of vehicles now in use. The Service authorizes the use of passenger motor vehicles for area conservationists, technical specialists, survey supervisors and State Office personnel in areas where public transportation is inadequate or nonexistent, or for types of travel where considerable distances are involved and the use of pickup trucks or public transportation is not feasible. Much of the use of these passenger vehicles is for transportation of personnel to several locations in a single day where frequent stops are made to examine field work in progress or to discuss with resident technicians at isolated points the program of soil conservation being conducted in the area. Because of the nature of this travel, the frequency of the stops, and the fact that common carrier facilities do not serve the rural areas, it is impossible to use other means of transportation.

It is estimated that the 120 passenger motor vehicles will cost $131,700 after applying the trade-in value of the old vehicles.

Watershed Protection

The estimates for 1956 include the scheduled replacement of 25 passenger motor vehicles during the fiscal year. These vehicles will replace a similar number of vehicles now in use. The vehicles are used by planning technicians in connection with making surveys and investigations of watersheds on which applications for the establishment of watershed projects have been received, and for the planning and supervision of the installation of works of improvement in watershed project areas.

It is estimated that the 25 passenger motor vehicles will cost $27,500 after applying the trade-in value of a similar number of old vehicles.

Flood Prevention

The estimates for 1956 include the scheduled replacement of 6 passenger motor vehicles during the fiscal year. These vehicles will replace a similar number of vehicles now in use. The vehicles are used by employees of the Service engaged in the installation of works of improvement on approved Flood Prevention projects.

These technical specialists usually have to travel considerable distances in rural areas where public transportation is inadequate or nonexistent and under circumstances where the use of pickup trucks is not feasible.

It is estimated that the 6 passenger motor vehicles will cost $6,600 after applying the trade-in value of a similar number of old vehicles.

The total number of passenger vehicles operated by the Soil Conservation Service on June 30, 1954 was 1,215. Of this number only one vehicles is used in Washington, D. C. The balance are distributed among the 51 State and Territorial Offices, approximately 325 area offices, and various technical specialists located at other field headquarters. The travel of resident technicians serving the soil conservation districts to field areas to perform engineering work, conduct surveys, lay out conservation plans or to prepare plans with the farmers and ranchers is performed by pickup trucks.

All of the vehicles proposed to be replaced will be well within the standards of 60,000 miles or 6 years established by the Bureau of the Budget. Many of these vehicles have reached such an age and mileage that they are now uneconomical to operate. Also, due to the normal deterioration of the vehicles, it is necessary to have them out of use for excessive periods of time for repairs.

The policy of the Soil Conservation Service, based on past years' experience in operating passenger motor vehicles, is to replace one-seventh of the inventory each year since this would permit replacement of vehicles which have reached seven years of age and have been driven approximately 70,000 miles. However, circumstances have prevented the Service from attaining this schedule of replacement as of June 30, 1954. Actually, 40 percent of the cars (489 vehicles) had been driven in excess of 60,000 miles and 27 percent (331 vehicles) were in excess of 6 years old. Of these vehicles 42 had traveled in excess of 100,000 miles and 8 were 10 years old. In order to fully utilize the passenger transportation equipment, cars are not exclusively assigned to one individual at locations where more than one employee has need for the equipment, thereby allowing several employees to use a single passenger car. Under Service policy all employees are directed to coordinate travel to the same locality in order that two or more employees may be transported at the same time to receive maximum utilization of equipment.

Below is itemized a statement as to the ages and mileage of passenger motor vehicles of the Soil Conservation Service as of June 30, 1954.

Mileage	Number of Vehicles	Percentage
0- 10,000	106	8.7
10,000- 20,000	88	7.2
20,000- 40,000	217	17.9
40,000- 60,000	315	26.0
60,000- 80,000	309	25.4
80,000- 100,000	138	11.4
100,000- 120,000	35	2.9
120,000- and over	7	0.5
	1,215	100.0

Year Model	Number of Vehicles	Percentage
1954	35	2.9
1953	199	16.4
1952	102	8.4
1951	206	16.9
1950	161	13.3
1949	181	14.9
1948	228	18.8
1947	69	5.6
Prior year models	34	2.8
	1,215	100.0

AGRICULTURAL CONSERVATION PROGRAM SERVICE

Purpose Statement

The Agricultural Conservation Program is authorized under the provisions of sections 7 to 17, inclusive, of the Soil Conservation and Domestic Allotment Act, as amended.

The purposes of the Act include (1) restoring and improving soil fertility, (2) reducing erosion caused by wind and water, and (3) conserving water on land. To effectuate these purposes, the Agricultural Conservation Program offers cost-sharing assistance to individual farmers and ranchers in all of the 48 States, Alaska, Hawaii, Puerto Rico and the Virgin Islands for carrying out approved soil-building and soil-and-water conserving practices on their farms. Allocations are made to States based upon conservation needs.

Cost-sharing assistance is offered only for the practices considered necessary to meet the most urgently needed conservation problems of the farm, which would not otherwise be carried out to the extent needed. To be eligible for cost-sharing the farmer must make application therefor before beginning the practice.

Conservation measures for which cost-sharing assistance is offered, include practices primarily for:

1. Establishment of permanent protective cover.

2. Improvement and protection of established vegetative cover.

3. Conservation and disposal of water.

4. Establishment of temporary vegetative cover.

5. Temporary protection of soil from wind and water erosion.

6. Similar practices with limited area applicability.

Cost-sharing assistance is available in the form of:

1. Partial payment of the purchase price of materials and services needed by the farmer for carrying out approved practices, or

2. Partial reimbursement to farmers who have carried out approved practices at their own expense.

Materials and services are obtained through local private sources where practicable.

Rates of assistance vary by practices and by States and areas so as to make the most effective use of available funds. The average rate of assistance for all practice is less than one-half the cost of performing the practice. The farmer bears the balance of the cost and in addition, supplies the labor necessary to carry out the practice.

	Appropriated, 1955	Budget Estimate, 1956
Appropriated funds	$191,700,000	$250,000,000
Less estimated reduction due to availability of balances under the 1953 program	- -	-34,000,000
Net appropriation	191,700,000	216,000,000

AGRICULTURAL CONSERVATION PROGRAM

		On Direct Appropriation Basis	On Basis of Program Authorization
Appropriation Act, 1955, and base for 1956		a/ $191,700,000	b/ $195,000,000
Budget Estimate, 1956	$250,000,000		
Less estimated reduction due to availability of balances under the 1953 program	-34,000,000		
Net Budget Estimate		216,000,000	c/ 250,000,000
Increase		+24,300,000	+55,000,000

a/ Excludes prior-year balance of $2,323,121 for Farm Land Restoration Program in flood-stricken areas, of which it is estimated that $2,311,121 will be returned to the Surplus Fund of the Treasury. These balances expired for obligation purposes on December 31, 1954.

b/ Advance authorization contained in the 1954 Agricultural Appropriation Act. Excludes supplemental appropriation of $15,000,000 (P. L. 357), 83rd Congress, approved May 11, 1954 for making payments to farmers carrying out emergency wind control measures under the 1954 Agricultural Conservation Program.

c/ Advance authorization contained in the 1955 Department of Agriculture and Farm Credit Administration Appropriation Act.

SUMMARY OF INCREASES, 1956
(On basis of Program Authorization)

Increase in cost-sharing assistance to farmers in carrying out conservation measures in the 1955 crop year program compared with the 1954 program	+54,500,000
Increase in operating expenses of Agricultural Stabilization and Conservation State Offices	+500,000

The Agricultural Conservation Program is operated on a calendar (crop) year basis. The 1954 program which closed December 31, 1954, was financed from funds provided in the 1955 Department of Agriculture and Farm Credit Administration Appropriation Act. In that Act, the Congress authorized the formulation and administration of a 1955 Agricultural Conservation Program amounting to $250,000,000 for which the 1956 Budget Estimate is submitted.

PROJECT STATEMENT

Project	1953 Program (Fiscal Year 1954) (Estimated)	1954 Program (Fiscal Year 1955) (Estimated)	Increases	1955 Program (Fiscal Year 1956) (Estimated)
Agricultural Conservation Program:				
Cost-sharing assistance to farmers	$186,794,856	a/ $171,486,000	+$54,500,000(1)	$225,986,000
Other program expenses	1,008,667	1,014,000	- -	1,014,000
County Committee operating expenses:				
ASC County Committees	19,263,622	18,378,200	- -	18,378,200
Forest Service	95,428	101,800	- -	101,800
National and State Office operating expenses	4,181,600	4,020,000	+500,000(2)	4,520,000
Total, Program or Authorization	211,344,173	195,000,000	+55,000,000	250,000,000
Adjustments (to fiscal year basis):				
Difference in amount used for advance purchase of conservation materials and services from prior fiscal year appropriation for current program and amount used for advance purchase of conservation materials and services from current fiscal year appropriation for ensuing calendar year	-16,028,514	+14,006,119	014,006,119	- -
Emergency Wind Control Measures, Supplemental Appropriation (P. L. 357)	+15,000,000	- -	- -	- -
Received by loan from CCC	-30,143,881	-43,450,000	- -	-43,450,000
Repayment of loan from CCC	+46,810,222	+26,143,881	-16,693,881	+9,450,000
Total appropriation or estimate	226,982,000	191,700,000	+24,300,000	216,000,000

a/ Excludes supplemental appropriation of $15,000,000 (P. L. 357), 83rd Congress, approved May 11, 1954 for making payments to farmers carrying out emergency wind control measures under the 1954 Agricultural Conservation Program.

Advance Authorization for the 1956 Agricultural Conservation Program

An authorization of $175 million is proposed for the 1956 ACP. This authorization will permit a program of approximately the same level and scope as the programs authorized for 1954 and 1955, exclusive of the increased funds authorized for 1955 for additional conservation work on diverted acres and for 1954 for emergency measures in the dust bowl area. This can be done with a $175 million authorization if small payment increases are not required. Language is proposed in the 1956 Budget which would make the small payment increase provision inoperative for 1956 and a recommendation is also being made to amend the basic legislation by repeal of the small payment increase provision in Section 8(e) of the Soil Conservation and Domestic Allotment Act.

It is contemplated that the National Agricultural Conservation Program for 1956 will be quite similar to the program for 1955. However, the policy of requesting each State to make recommendations on a 1956 national program will be continued, which may bring forth recommendations justifying program changes. It is not contemplated that any change will be made in the method used to distribute program funds among States. The formula which has been set forth by Congress in program authorizations for the past several years is now included in section 15 of the Soil Conservation and Domestic Allotment Act, as amended, by the Agricultural Act of 1954.

INCREASES

Based on the authorization of a 1955 Agricultural Conservation Program of $250,000,000 as contained in the 1955 Department of Agriculture and Farm Credit Administration Appropriation Act, the increase of $55,000,000 in this item, is composed of the following:

(1) An increase of $54,500,000 in cost-sharing assistance to farmers in carrying out conservation measures.

In view of the recognized need for an enlarged program for soil- and water-conservation in 1955, the Congress increased the advance authorization for the development of the 1955 program to $250 million.

The increase was requested because acreage allotments will cause a larger portion of cropland to be available for conservation treatment in 1955 than in 1954. This land will need protection and conservation measures, and will be one of the major problems which will confront farmers in 1955. Marginal land now in production needs to be put in protective cover as a part of a long-term land use adjustment. Other land temporarily taken out of production should be treated in 1955 to build up moisture and fertility reserves for future use.

In developing State and county programs particular attention is given to conservation problems of land diverted from crop production, and county committees are urged to give primary consideration to the requests of farmers and ranchers for ACP assistance for practices to meet the conservation problems on diverted acres.

(2) An increase of $500,000 to provide more supervision of Agricultural Stabilization and Conservation County Committees.

Agricultural Stabilization and Conservation County Committees are responsible for the administration of the Agricultural Conservation Program at the local levels. Supervision and review by ASC State Offices of the county committee operations is presently inadequate to insure acceptable work by the county committees. Additional funds are needed to provide more assistance in all phases of the Agricultural Conservation Program. It is essential that more work, primarily by ASC State Offices, be performed on the following specific items: (1) informing and training county committees and their employees on the overall operations of the program and assisting them in devising ways to get the work done, (2) maintaining a check on the progress of the work and taking positive action to improve such progress when it is unsatisfactory, (3) reviewing the paper work necessary for furnishing assistance (this is especially important since the General Accounting Office preaudit work has been discontinued), and (4) auditing operations of the county committees in connection with past and current programs.

CHANGES IN LANGUAGE

The estimates include proposed changes in the language of this item as follows (new language underscored; deleted matter enclosed in brackets):

For necessary expenses to carry into effect the provisions of section 7 to 17, inclusive, of the Soil Conservation and Domestic Allotment Act, approved February 29, 1936, as amended (16 U.S.C. 590g-590q), including not to exceed $6,000 for the preparation and display of exhibits, including such displays at State, interstate and international fairs within the United States; [$191,700,000] $250,000,000, which shall be reduced by an amount equal to that portion of the loan from the Commodity Credit Corporation for advance purchases of conservation materials and services under the 1955 program which can be repaid from funds not used for the 1953 program, to remain available until December 31 of the next succeeding fiscal year for compliance with the program of soil-building practices and soil- and water-conserving practices authorized under this head in the Department of Agriculture and Farm Credit Administration Appropriation Act [1954] 1955, carried out during the period July 1, [1953] 1954, to December 31, [1954] 1955, inclusive: PROVIDED, That not to exceed [$22,500,000] $23,000,000 of the total sum provided under this head shall be available during the current fiscal year for salaries and other administrative expenses for carrying out such program, the cost of aerial photographs, however, not to be charged to such limitation; but not more than [$4,020,000] $4,520,000 shall be transferred to the appropriation account, "Administrative expenses, section 392, Agricultural Adjustment Act of 1938", and for the 1956 program an amount not to exceed 5 per centum of the amount of funds available for payments under the 1956 program for the State shall be available for transfer to any Federal, State, or local public agency for services of technicians in formulating and carrying out the agricultural conservation program, but such use of these funds may be made only on the recommendation of the county committee and approval of the State committee: PROVIDED FURTHER, That payments to claimants hereunder may be made upon the certificate of the claimant, *** PROVIDED FURTHER, That such amount shall be available for salaries and other administrative

expenses in connection with the formulation and administration of the [1955] 1956 program of soil-building practices and soil-and water-conserving practices, under the Act of February 29, 1936, as amended (amounting to [$250,000,000] $175,000,000, including administration, [but of this amount not more than $195,000,000 may be used until a final program has been adopted relative to the use of acreage diverted from production,] and formulated on the basis of a distribution of the funds available for payments and grants among the several States in accordance with their conservation needs as determined by the Secretary, except that the proportion allocated to any State shall not be reduced more than 15 percentum from the distribution for the next preceding program year, but none of such funds may be used for the increase in payment authorized in Section 8(e) of the Soil Conservation and Domestic Allotment Act, as amended, and no participant shall receive more than $1,500 [:PROVIDED, That the funds available for payments and grants from said sum of $195,000,000 shall be distributed among the several States in the same proportion as the original allocation of funds for payments and grants for the 1954 agricultural conservation program] except where the participants from two or more farms or ranches join to carry out approved practices designed to conserve or improve the agricultural resources of the community); but the payments or grants under such programs shall be conditioned upon the utilization of land with respect to which such payments or grants are to be made in conformity with farming practices which will encourage and provide for soil-building and soil-and water-conserving practices in the most practical and effective manner and adapted to conditions in the several States, as determined and approved by the State committees appointed pursuant to section 8(b) of the Soil Conservation and Domestic Allotment Act, as amended (16 U.S.C. 590h (b)), for the respective States: [PROVIDED FURTHER, That not to exceed 5 percentum of the allocation for the 1955 agricultural conservation program for any county may, on the recommendation of such county committee and approval of the State committee, be withheld and allotted to the Soil Conservation Service for services of its technicians in formulating and carrying out the agricultural conservation program in the participating counties, and the funds so allotted may be placed in a single account for each State, and shall not be utilized by the Soil Conservation Service for any purpose other than technical and other assistance in such counties:] PROVIDED FURTHER, That for the [1955] 1956 program [$2,500,000 shall be available for technical assistance in formulating and carrying out agricultural conservation practices and] $1,000,000 shall be available for conservation practices related directly to flood prevention work in approved watersheds: [PROVIDED FURTHER, That in carrying out the 1955 program the Secretary shall give particular consideration to the conservation problems on farm lands diverted from crops under acreage-allotment programs:] * * *

Other than the usual changes in year dates applicable to the program covered by the appropriation and the period of availability thereof, the estimates include proposed changes in language of the item as follows:

The first change provides that the appropriation for 1956 of $250,000,000 for carrying out the 1955 program as authorized by the Congress shall be reduced by the unobligated balance under the 1953 program. This will not

affect the size of the 1955 program since such balances would be used for the partial repayment of the 1955 fiscal year loan from the Commodity Credit Corporation for the advance purchase of conservation materials and services. This will reduce by a like amount the repayment which otherwise would have to be made from the 1956 fiscal year appropriation. These balances are presently estimated at $34,000,000.

The second and third changes increase by $500,000 (1) the amount which may be used for salaries and other administrative expenses, and (2) the limitation on the amount to be transferred to the appropriation account established under Section 392 of the Agricultural Adjustment Act of 1938, as amended. These funds are required to provide more supervision and review of Agricultural Stabilization and Conservation County Committee operations.

The fourth change provides that an amount not to exceed 5% of the amount of funds available for payments under the 1956 program in a State shall be available for obtaining technical services from any Federal, State or local public agency. Such technical services are to be used in the formulation and carrying out of the 1956 Agricultural Conservation Program. Transfer of these funds would be made only on the recommendation of the county committee and approval of the State committee. This change replaces the authority included in previous appropriation acts providing for the transfer of up to 5% of any county allocation to the Soil Conservation Service for technical services. The proposed change would accomplish the following:

(1) The authorization for technical services would be more clearly associated with the administrative expense item in the appropriation language. This is desirable since the cost of technical services authorized by this provision is an expense of operating the program and should be more closely related to the administrative expense item than it has been in past appropriation acts;
(2) The proposed language would make it possible to draw not only upon the Soil Conservation Service, but also other agencies, in obtaining the services of technicians. For example, services with respect to forestry practices might be obtained from State Foresters. Such services might, in appropriate cases, also be obtained from local public agencies. The changes would have no effect on the Department's continuing policy which prohibits ASC committees from employing technicians of their own to perform technical work;
(3) The proposed language would change the limitation on the amount of funds which could be used for technical services from 5% of the county allocation to 5% of the funds available for payments in the State. This would provide needed flexibility within a State to permit use of the available funds more nearly where needed within the State.

The fifth change proposes an overall Agricultural Conservation Program for the crop year 1956 of $175,000,000 as explained above.

The sixth change proposes to eliminate language which for 1955 limited the program to $195,000,000 until a final program had been adopted relative to the use of acreage diverted from production. Language similar to this is not considered necessary in the authorization for the 1956 program as proposed in the 1956 Budget Estimates.

The seventh change would make inoperative for the 1956 Agricultural Conservation Program the provision in Section 8(e) of the Soil Conservation and Domestic allotment Act that payments of less than $200 shall be increased by specific amounts. This provision became effective in 1938 when commodity payments made up approximately 85 percent of all program payments. No commodity payments have been authorized since 1943. Under present programs more than 90 percent of all payments are under $200 and must be increased under this provision. The criteria for making small payment increases is not the size of the farm but the size of the payment. Under the present program the conservation problems on small farms can be more adequately considered by the method being used by county committees of approving cost-sharing assistance based on the conservation problems of the farm or ranch, taking into consideration such problems for the entire county and the work for which they consider the Federal cost-sharing is most needed. Small payment increases require from 12 to 15 percent of the total funds available for assistance. Under the 1955 program $25,797,000 is withheld as a reserve for this purpose. It is believed that more conservation per dollar spent could be obtained without this provision. The Department is planning to submit a proposal for an amendment to the Soil Conservation and Domestic Allotment Act to eliminate this requirement from the basic legislation.

The eighth change eliminates the language specifying that in the distribution of funds for 1955, $195,000,000 should be distributed among the States in the same proportion as was originally allotted for the 1954 program. This is not necessary for 1956 since the provisions of the Agricultural Act of 1954 (Sec. 502) and the language proposed in this item for 1956 state: "except that the proportion allocated to any State shall not be reduced more than 15 percentum from the distribution for the next preceding program year." This will prevent the possibility of substantial reductions in any State's proportion of the total program funds available. For 1955 every State received an allocation in excess of the minimum under the provision which it is proposed to eliminate.

The nineth change would exempt any ACP payment from the $1,500 payment limitation where participants from two or more farms or ranches join to carry out approved practices designed to conserve or improve the agricultural resources of the community. ACP payments with respect to these projects would be subject to the $10,000 payment limit contained in section 8(e) of the Soil Conservation and Domestic Allotment Act, as amended. These community projects often are the only means of solving the problem and can only be carried out efficiently through cooperation. However, the $1,500 limit seriously hampers the operation of many of these projects because they are so large that cost-sharing in excess of $1,500 is required to get the necessary work carried out. For some projects a $1,500 ACP payment would represent only a small percent of the total cost. ACP cost-sharing rates for most of these projects would permit payments up to about 50 percent of the cost if it were not for the $1,500 limit.

The work required in connection with these community projects must be carried on as a single unit rather than as separate projects for each individual farmer whose lands will be benefited. They can most practicably be carried out by the farmers designating a manager to handle the project. In such cases the payment limitation applies as $1,500 to only one person. The change requested will enable many of these cooperative projects to be carried out which would not otherwise be undertaken.

The tenth change would eliminate language that provides for up to 5 percent of the allocation for any county to be withheld and allotted to the Soil Conservation Service for the services of its technicians. Change number four as explained above, replaces this language making it unnecessary to continue this language.

The eleventh change eliminates language which required that a mimimum of $2,500,000 under the 1955 program be used only for technical assistance. This minimum is no longer necessary since in recent years the amount used for technical assistance has been far in excess of this amount. In 1953 the estimated use of funds under the SCS 5 percent transfer provision was about $4.3 million and in 1954, $5.4 million.

The twelfth change eliminates the language which directed that in carrying out the 1955 program, the Secretary should give particular consideration to the conservation problems on farm lands diverted from crops under acreage allotment programs. Section 502 of the Agricultural Act of 1954 requires the Secretary to give particular consideration to such problems. Therefore, such language is not needed for 1956.

STATUS OF PROGRAM

Conservation of agricultural soil and water resources is recognized as essential to the future well-being of the Nation. Not only is it essential to assure a continued supply of food, fiber and shelter for an increasing population, but also to supply the largest part of the raw materials that go into the expanding economy of the Nation. In 1952 over 70 percent of the value of all raw material that was produced for the economy of the country came from its fields, pastures and forests. 1/ Transporting, processing, financing and handling these raw materials so as to make them useful and supply them where they are needed makes up a large part of all the business and commerce that furnishes the livelihood for the Nation's nonfarm population. Because of their interests in food, fiber and shelter and a continued healthy economy, nonfarm people have perhaps an even greater interest in conservation of soil and water resources than farmers themselves.

Conservation work costs money. There are few, if any, conservation measures that do not require an initial investment in materials, in power, or in labor. Recovery of investment in many needed conservation measures is relatively slow as compared to investment of capital in measures necessary for production of things to sell and produce income. One of the problems of carrying out conservation measures is that the more enduring conservation measures are usually more costly and require a longer period of time before a return on the additional capital investment is realized. Capital investment per worker on farms is high. In 1953 it was $18,718 per worker in agriculture as compared to $9,867 per worker in manufacturing. 2/ In 1953 the per capital net farm income (including income from farming and from farm sources) was $882 as compared to $1,898 for the nonfarm population. 3/

It is with this background of cost and returns from conservation work and the public's dependence upon the conservation of soil and water resources that Federal cost-sharing of conservation practices on individual farms is offered. Research and experimental work have developed and are developing means by which soil and water resources can be conserved. Educational work is teaching the value and need for conservation work. Technical services help determine the conservation measures that are needed and furnish engineering and technical services to correctly install them. Federal cost-sharing by the Agricultural Conservation Program helps overcome the economic barriers to carrying out conservation measures. The basic purpose of the Agricultural Conservation Program is to protect the public's interest in the Nation's soil and water resources by affording a means by which all the people may bear a part of the costs of those measures that would not otherwise be carried out at the rate needed.

1/ From United States Department of Commerce Working Paper No. 1, 1954.
2/ United States Department of Agriculture, ARS-1953 Agricultural Appropriation Hearings (House) Part I, page 174.
3/ United States Department of Agriculture, AMS - The Farm Income Situation, March, 1954.

Changes in the Agricultural Conservation Program

The Agricultural Conservation Program in 1954 was directed toward development of practices that were more permanent in their effect; however, it was not limited to such practices. It also emphasized the complete treatment of a particular conservation problem. Changes made in practices consisted mainly in combining into one practice all of the elements needed for the complete practice. Another change was to offer the farmer a definite and exact amount of cost-sharing on a particular job rather than the possibility or chance that he might get some or more financial help if other farmers fall down on their conservation undertakings.

Program Development

Development of the Agricultural Conservation Program begins at the local or county level. The county Agricultural Stabilization and Conservation Committee, with the assistance of the County Agent and representatives of the Soil Conservation Service, Forest Service, and other local agencies interested in conservation, makes recommendations to the State Agricultural Conservation and Stabilization Committee. These are summarized by the State Committee and used as the basis for the State Extension Service, Soil Conservation Service, Forest Service, the State Agricultural Stabilization and Conservation Committee and other agencies interested in conservation to formulate joint recommendations to the Agricultural Conservation Program Service in Washington.

From these recommendations, the Agricultural Conservation Program Service, Soil Conservation Service and Forest Service develop and recommend to the Secretary a National Program. State and county committees then develop their programs within the structure of the National Program approved by the Secretary.

Program Administration

The Agricultural Conservation Program is administered locally by County Agricultural Stabilization and Conservation Committees. These committees are made up of resident farmers elected by the farmers they serve. County Committees are supervised by State Agricultural Stabilization and Conservation Committees consisting of resident farmers appointed by the Secretary of Agriculture. The local County Agent is an ex officio member of the County Committee and the State Director of Extension holds a like position on the State Committee.

State, county and community committeemen are assigned the responsibility for the field administration of the program and work directly with farmers in utilizing program assistance in an effort to get the greatest volume of conservation performed on the land by the farmers themselves. The responsibility for technical determinations regarding permanent type-practices in the field is assigned to the Soil Conservation Service except for forestry practices, responsibility for which is assigned to the Forest Service.

Participation Under the 1953 Agricultural Conservation Program

Item	Unit	Total 1/	Participating Farms 1/	Portion Participating
				Percent
Farms	Number	5,507,990	2,012,788	37
Farm land	1,000 acres	1,242,117	573,054	46
Cropland	1,000 acres	476,872	253,434	53
Noncrop pasture and range	1,000 acres	558,285	225,743	40

1/ Includes United States, Alaska, Hawaii, Puerto Rico and Virgin Islands.

Program for 1954

The 1954 Agricultural Conservation Program was carried out with emphasis upon permanent and semi-permanent practices consistent with the authorization provided by Congress in the Agricultural Appropriation Act of 1954. Particular emphasis has been placed on those practices on farms which are essential in the public interest and which farmers or ranchers would not carry out to the desired extent with their own resources.

Soil conserving land use adjustments and the establishment of improved crop rotations were stressed. A combination of cost-sharing on seed, lime and fertilizer essential to the success of desirable crop rotations was provided in the program. The initial improvement consisting of renovation, application of minerals and correction of lime deficiencies for existing grasslands was also encouraged. Local responsibility for selecting practices from the national program to meet within county conservation problems was continued, and authority was provided for developing additional practices to meet special local conditions not provided for in the national program.

The extremely dry weather in the summer and fall of 1953 which continued into the spring of 1954 was a deterrent to the use of some seriously needed practices in a part of the country. In a period of decreased income there is a great effort on the part of farmers to husband their limited resources. The net result of these factors may have caused a decrease in the number of farms participating in 1954.

Emergency Wind Erosion Practices

The extended drought of 1953 resulted in a wide area of severe wind erosion damage during the spring of 1954. The area included counties in six States in the Southern and Central Great Plains. Funds available in the normal distribution of 1954 funds to these counties were found inadequate to meet the wind erosion problem of the area. The 1954 program was increased by an appropriation of $15,000,000 for wind erosion control practices in the counties recommended by the State Governors of the States affected, and approved by the Secretary. A new practice was added to the program which provided assistance to farmers to carry out emergency wind erosion control measures in designated counties. The total amount of

assistance under this practice could not in any event exceed $1.25 per acre but was limited administratively to 50 percent of the cost of the practice. An exception was made for hardship cases which, upon recommendation of the county committee and approval of the State Committee, could receive assistance up to the full cost of the measure - not to exceed $1.25 per acre.

ACP Provisions Applicable to Drought Damaged Areas

Both the 1954 and 1955 Agricultural Conservation Programs provided for the local development of practices to meet new conservation problems. Under this authorization a conservation practice involving the establishment of protective vegetative cover in the fall of 1954, was developed for use under the 1954 ACP in many States where vegetative cover had been seriously damaged by drought. A number of these States also included a similar practice in their 1955 program in drought damaged counties, early enough to seed the eligible crops in the fall of 1954. Rates of cost-sharing under this practice generally averaged 50 percent of the average cost of carrying out the practice, however provision was made for a higher rate of cost-sharing where needed to bring about the desired performance, and some States authorized rates of cost-sharing in excess of 50 percent of the cost under this provision.

Most of the practices developed for the establishment of this protective vegetative cover in drought areas provide for the seeding of annual legumes or grasses. However, some practices authorize the use of perennial and biennial legumes and grasses. The provisions of this emergency winter cover crop practice are somewhat more liberal than those of the regular winter cover crop practices. For the regular cover crop practices none of the growth may be harvested for hay or seed and cost-sharing is limited to acreage in excess of the average plantings of such purposes for the past 3 years. For the emergency cover crop practices cost-sharing could be approved for all acreages planted and the crop could be harvested for hay. This emergency practice therefore helped to meet the emergency conservation problem and also helped to relieve the shortage of forage in drought damaged areas.

The Program for 1955

The important changes made in the 1954 program and the improvement in types of practices will be carried forward in 1955 with certain modifications. Provision is made for the completion of an effective part of a practice during the program year with the condition that the complete practice will be finished during an ensuing program year.

One of the major problems which will confront farmers and ranchers in 1955 is the protection and improvement of land taken out of the production of allotment crops. Marginal land now in production should be put in protective cover as a part of needed long-term land-use adjustments. Other land temporarily taken out of production should be treated in 1955 to build up reserves of moisture and fertility so that it can best serve in meeting future production needs.

In areas where farmers will be diverting land from normal crop uses, State and county committees and those agencies which participate with them in the development of State and county programs are to develop their programs so as to give particular attention to the conservation problems on land diverted from crop production. County committees are urged to give primary consideration to the requests of farmers and ranchers for Federal cost-sharing which is needed for practices which will meet the conservation problems on diverted acres.

The program for 1955 represents an increase of $55 million over the 1954 program to give more help to farmers in caring for lands temporarily diverted from allotment crops and also to help them make long-time land-use adjustments needed for conservation on a continuing basis. Assistance for this type of work, however, was not limited to the increase over 1954. County Committees could use any portion of the total program which they considered necessary to assist in meeting the conservation problems on diverted acres. No special distribution was made of the $55 million increase. All funds have been distributed to States on the basis of the conservation needs formula contained in the Appropriation Act. New language, however, was included in the Appropriation Act which provided: "That the funds available for payments and grants from said sum of $195,000,000 shall be distributed in the same proportion as the original allocation of funds for payments and grants for the 1954 Agricultural Conservation Program...." This new provision was applied; however, the allocation determined under the conservation needs formula was larger for each State than the minimum determined under this new language. The diverted acre problem exists in every State. There are no practices set up solely for diverted acres - all of the practices in the program are available for treating the conservation problems on diverted acres which are generally similar to the problems on other cropland.

There is continued and emphasized local responsibility for general administration and selection of practices to meet within county problems under the 1955 program. County Committees will be encouraged to develop practices to provide the most enduring benefits practicably attainable in 1955 on the individual farm. There is continued emphasis on the working together of county committees with the Soil Conservation Service and Forest Service locally to carry on a more efficient and technically sound program. Provision is continued for the local development of special practices to meet unforeseen conditions that arise during the year such as drought, flood and other disasters.

Estimated Needs for Selected Conservation Measures and Amount Performed Under the 1953 Agricultural Conservation Program

Permanent-type Measures

Practice	Unit	Estimated 1/ Remaining Needs	Extent Under the 1953 ACP
Dams and reservoirs 2/	Number	2,620,895	47,387
Drainage 3/	Acres drained	69,318,041	1,525,571
Permanent sod waterways	Acre	4,737,846	41,561
Standard terraces	Acre	106,861,527	636,005
Diversion and spreader terraces	Mile	467,246	3,123
Establishing contour stripcropping 4/	Acre	41,873,115	161,041
Establishing permanent cover on land subject to erosion	Acre	8,311,261	120,567
Seeding and reseeding pasture	Acre	147,983,047	4,610,831
Leveling land to conserve irrigation water and prevent erosion	Acre	11,203,582	311,576
Tree planting	Acre	29,445,415	80,208

Annual and Recurring Measures

Practice	Unit	Estimated Annual Need 1/	Extent under the 1952 ACP
Contour farming 5/	Acre	140,934,983	1,845,810
Crop residue management 6/	Acre	27,496,256	5,190,889
Stripcropping not on the contour	Acre	31,906,079	7,731,802
Liming materials applied for conserving uses (standard ground equivalent)	Ton	80,771,976	15,136,451
Phosphate materials applied to conserving crops (20% P_2O_5 equivalent) 7/	Ton	16,513,252	2,212,127
Green manure and cover	Acre	103,731,522	10,860,094

1/ Survey of conservation needs as approved by the Secretary and used as basis for distributing Agricultural Conservation Program funds among States.

2/ Includes earthen storage-type structures for erosion control, livestock water, and irrigation.

3/ Includes open and enclosed type drainage.

4/ Also includes the establishment of cross-slope stripcropping.

5/ Includes cross-slope and contour farming of row crops and close-seeded crops.

6/ Includes stubble mulching, and the leaving of high-cut stalks and stubble, on other than protected summer fallow.

7/ Includes phosphate in coffee grove fertilizer in Puerto Rico.

Accomplishments Under the Agricultural Conservation Programs-1936-1953

Conservation Measure	Amount
Standard terraces	1,089,000 Miles
Contour farming row and close-seeded crops 1/	136,398,000 Acres
Establishing contour stripcropping 2/	4,787,000 Acres
Stripcropping not on the contour	100,929,000 Acres
Establishing permanent sod waterways	381,000 Acres
Tillage operations on cropland to prevent erosion 3/	92,050,000 Acres
Storage-type dams and reservoirs (Earthen only)	1,222,000 Dams
Drainage 4/	32,707,000 Acres
Irrigation ditch reorganization to conserve water and prevent erosion	13,878,000 Rods
Leveling land for irrigation	6,078,000 Acres
Seeding and reseeding pasture	70,456,000 Acres
Constructing and maintaining fireguards to protect range land	179,000 Miles
Control of competitive plants on range and pasture	30,224,000 Acres
Tree planting	1,203,000 Acres
Timber stand improvement	665,000 Acres
Constructing firebreaks to protect woodland	126,000 Miles

1/ Also includes cross-slope farming.
2/ Also includes cross-slope stripcropping.
3/ Includes listing, pitting, furrowing, on the contour; basin listing, emergency listing, pit cultivation and cross-slope chiseling.
4/ Land benefitted includes open and enclosed drains.